DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES APPROPRIATIONS FOR 1991

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS

HOUSE OF REPRESENTATIVES

ONE HUNDRED FIRST CONGRESS

SECOND SESSION

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUDGET JUSTIFICATIONS, F.Y. 1991

March 3, 1849

GEOLOGICAL SURVEY

NOTICE: These budget justifications are prepared for the Interior and Related Agencies Appropriations Subcommittees. Approval for release of the justifications prior to their printing in the public record of the Subcommittee hearings may be obtained through the Office of Budget of the Department of the Interior.

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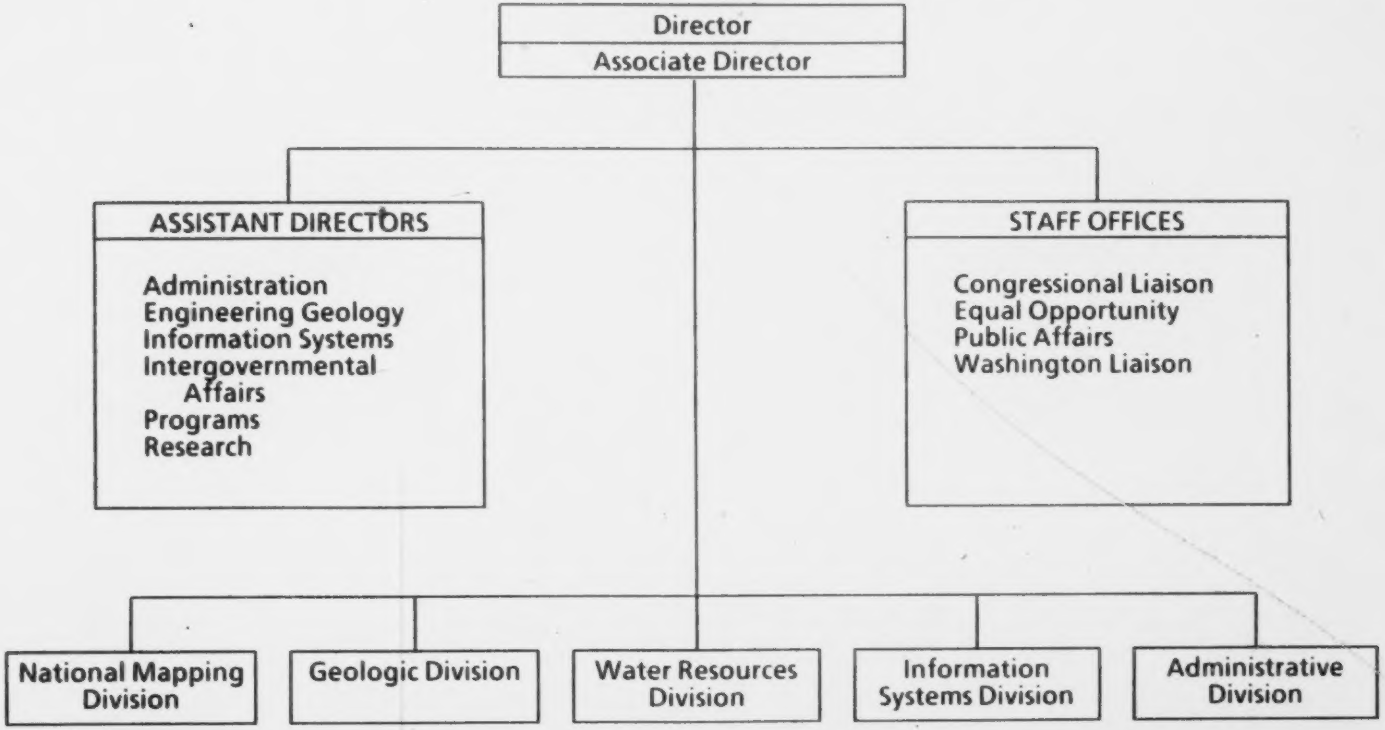
U.S. Department of the Interior

GEOLOGICAL SURVEY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National Mapping Division
Geologic Division
Water Resources Division
Information Systems Division
Administrative Division

GENERAL STATEMENT

The U.S. Geological Survey (USGS) is the Nation's principal earth science agency established in 1879 to provide research, data production and dissemination, and national resource appraisal for the benefit of all Americans. The basic research and analytical capabilities provide early identification and response to emerging or persistent national problems and are the hallmark of the Geological Survey's international reputation as an objective scientific and technical agency whose standard data can be used with confidence in the decision making process. The USGS conducts research and provides geologic, topographic, and hydrologic information that contributes to the effective management of the Nation's natural resources and that promotes the health, safety, and well being of society. This information is provided in the form of maps, automated data bases, and descriptions and analyses of the water, energy and mineral resources, land surface, underlying geologic structure, and the dynamic processes of the earth.

The National Mapping Division supports Federal, State, and public interests by providing a diversity of cartographic, geographic, and remotely sensed data, products, and services. These include basic and special maps in several scales, digital cartographic data, remotely sensed data, and cartographic and geographic information. The Geologic Division provides geologic, geochemical, and geophysical information and analyses for other government agencies and for the public concerning land resources, mineral and energy resources, and geologic hazards of the Nation and its territories. The Water Resources Division has the principal Federal responsibility for assessing the Nation's water resources and for providing both qualitative and quantitative hydrologic information. To accomplish this mission, the Water Resources Division, in cooperation with State and local governments and other Federal agencies, conducts a balanced program of surveys, investigations, and research on the status of the Nation's surface and ground water resources. The Administrative Division provides support and facilities management for the Survey's programs as well as financial management services for other bureaus of the Department. The Information Systems Division maintains central computer and telecommunications operations and provides technical assistance to the users of the many automated scientific data bases.

The FY 1991 budget reflects both Presidential policies and the Secretary's stewardship theme that will provide the framework during this decade to support a more secure natural, economic and social environment for the Nation as it begins the 21st century. The program being proposed reflects a clearer understanding of the vulnerability of our natural environment. Increased emphasis will be focused on global climate change, water quality assessment and wetlands research. The nation's economic well being will be supported through several significant program initiatives: sustained multiyear conversion to a fully automated mapping capability; and expanded data bases in oil, gas and coal commodities to better identify and estimate the Nation's energy resource endowment, and to provide the publicly available information to energy suppliers, exploration industry, and energy and environmental researchers.

The concern for a society that enjoys full education and employment opportunities is emphasized through increased outreach to all levels of the earth science academic community. USGS has established a goal to increase the representation of minorities and women in earth science career fields, particularly within the USGS, and in other sectors through increased training and education opportunities. The Survey's contributions in support of programs in volunteerism, drug-free work place, and Take Pride in America will also be strengthened.

The proposed programmatic increases result from previous policy decisions and from studies that document their need and resource requirements.

- The **Global Change** program within the USGS is an integrated effort that responds to the need for improved earth science information that is unique to the basic capabilities of the Survey's major scientific disciplines: geology, hydrology, cartography, and geography. The budget request has been formulated as an integral part of the July, 1989, U. S. Global Change Research Program Research Plan developed by the interagency Committee on Earth Sciences, of the Federal Coordinating Council on Science, Engineering, and Technology, under the Office of Science and Technology Policy. The FY 1991 program will contribute and expand research on past climate variability, changes in cold climates and hydrologic cycles, and the development of systems to access and manage earth science data as part of the President's Global Change initiative.

- The multiyear transition from the pilot program to a full-scale **National Water Quality Assessment Program** is proposed to begin in FY 1991. This program will produce information needed to describe and better understand the status and trends in the quality of the Nation's surface- and ground-water resources. The FY 1991 program will begin 20 of the eventual 60 study units which will be selected to ensure 1) a good distribution among the major hydrologic regions of the nation, 2) support for the President's water quality initiative which focuses on agricultural sources of water contamination, and 3) relevance to the information needs of other Federal agencies. In 1990 the program will complete the data collection phase of the pilot studies that were begun in 1986 with the intent of developing and testing methodologies for a national assessment and in FY 1991 will complete project reports and continue selected activities to assess water quality changes in the seven areas.

  The independent evaluation of this program, conducted by the National Academy of Sciences (NAS), is scheduled to be published in April, 1990. The NAS preliminary report indicates that a national scale, long term water quality assessment program is needed and that the USGS is well qualified to implement the program because of its nonregulatory mission and its ability to undertake the long-term commitment necessary for such a program to be successful.

- Modernization of the USGS national mapping program which began in 1986 continues in FY 1991 through the **Advanced Cartographic Systems** program. The new mapping system requires a long-term, time phased investment for development of state-of-the-art hardware and software to support generation and revision of cartographic products. In consultation with the Office of Management and Budget, the USGS has conducted a series of economic analyses to determine a cost-effective method of map production and to estimate the economic benefits of revising primary maps and digital data.

- Detailed public information identifying the types, quantities, and locations of acceptable energy resources is needed by policy makers in a variety of Federal agencies for management of public lands. Energy resource data is also needed by the USGS to provide an assessment of the Nation's energy endowment and by the Department of Energy to formulate a National Energy Strategy. The proposed increase to the **Evolution of Sedimentary Basins** program allows acquisition of new data, upgrading of existing data bases, establishment of a National Energy Research Seismic Library and cooperative programs with States and universities.

  The 1988 National Research Council (NRC) report of the Committee Advisory to the USGS concluded that an expanded program " should become the core of the USGS energy research program," with enhancements needed in high-quality regional data bases, including shallow and deep reflection seismic data, cores and samples, the integration of crustal analyses and basin evolution, and cooperative programs with States, universities and other Federal agencies.

- The Administration's goal of increasing the quantity and quality of the Nation's wetlands resource base is addressed through research in the **Coastal Erosion and Wetlands Processes** program. Research will focus on the geologic framework and processes affecting the occurrence, evolution, and maintenance of wetlands, and on the internal geochemical processes within wetlands to provide a basis for future comparison and to estimate the availability of constituents to the ecosystem.

- There is widespread recognition and consensus within the scientific and educational communities, as well as the Administration and Congress of the need to foster high educational standards and increase participation of women and minorities in earth science careers. The FY 1991 budget proposes cooperative efforts with educational institutions to improve curricula and provide training and research opportunities. The budget request also proposes expanded equal opportunity efforts with opportunities for students to have "hands on" experience in working with earth scientists.

The FY 1991 budget also requests adjustments for increased costs for rental payments to the General Services Administration, workers and unemployment compensation, the Federal Employees Retirement System, one additional work day, the proposed January, 1991 pay raise, drug free work place, and the Departmental Working Capital Fund. In addition, reductions are proposed for anticipated savings due to achievement of administrative and staffing efficiencies. Offsetting programmatic reductions are proposed in the National Mapping, Geography and Surveys, Geologic and Mineral Resource Survey and Mapping and Water Resources Research budget activities.

Comparison of FY 1991 estimate with the FY 1990 enacted level:

(Dollar Amounts in Thousands)

Appropriation Requested		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Estimate	Inc. or Dec. from Enacted	Perm. Employ. 12/31/89
Surveys, Investigations and Research	$	484,709	478,156	506,578	21,869	8,452
	FTE-T	7,354	7,354	7,343	-11	
Surveys, Investigations and Research/Telecomm. Amortization	$	250	250	250	0	
	FTE-T	0	0	0	0	
Operation and Maintenance of Quarters	$	55	55	55	0	
	FTE-T	0	0	0	0	
Contributed Funds	$	0	0	0	0	
	FTE-T	0	0	0	0	
Total	$	485,014	478,461	506,883	21,869	
	FTE-T	7,354	7,354	7,343	-11	

Note: Surveys, Investigations, and Research appropriation does not include $12.0 million that was provided to the Earthquake Hazards Reduction program under the FY 1990 Dire Emergency Supplemental to Meet the Needs of Natural Disasters of National Significance, P.L. 101-130.

Highlights of the FY 1991 Request

SURVEYS, INVESTIGATIONS, AND RESEARCH

In the National Mapping, Geography and Surveys budget activity, increased funds are requested to continue the multiyear effort to develop and apply advances in automated cartographic techniques to map production. Increased funds are also requested in the Global Change Data Systems program for the continued design and development of the Land Data and Information Management System needed by the global change science community, land surface characterization research needed for global process and modeling studies, and to support the Interagency Working Group on Data Management for Global Change which coordinates global change related data management activities among NASA, NOAA, USGS, other bureaus of the Department, National Science Foundation, and the Departments of Agriculture, Energy, Navy, and State. Reductions are proposed in the National Map and Digital Data Production, Information and Data Systems, and Research and Technology subactivities.

Within the Geologic and Mineral Resource Surveys activity, an increase is proposed to expand global change research on prehistoric climates, polar climates, and arid regions and enable new research on biogeochemistry and volcanic emissions. The Evolution of Sedimentary Basins program increase will allow acquisition of new data in three basins, upgrade existing data bases, establish a National Energy Seismic Library and foster cooperative energy research with States, universities, and other Federal agencies. As a part of this effort, the USGS will begin to develop a program to assess the national energy endowment and make current energy data and information available. The Coastal and Wetlands Processes program will continue the Louisiana wetlands studies and refocus research on the geology and geochemistry of wetlands. The Geologic Hazards Surveys subactivity is funded at the FY 1990 level, with the Earthquake program reduction representing the one-time funding provided by the FY 1990 Dire Emergency Supplemental in response to the October 17, 1989 earthquake in the San Francisco Bay area. The Offshore Geologic Surveys subactivity is proposed at the current funding level, and, reductions are proposed in the Mineral Resource Surveys and Energy Geologic Surveys subactivities.

Within the Water Resources Investigations budget activity, Federal Program subactivity, the National Water-Quality Assessment Program is proposed to begin the multi-year transition from the pilot program to the full scale national program. Twenty of the eventual sixty study units will begin in FY 1991, with procedures established for consistency of the study approach, field and laboratory methods, and water-quality, and ancillary data measurements. The Global Change Hydrology program proposed funding increase will be used to begin or expand research activities on the interaction of climate and hydrologic systems, sensitivity of hydrologic systems and the biogeochemistry of greenhouse gases. Reductions in the Federal Program include Data Collection and Analysis, National Water Information Clearinghouse, Regional Aquifer System Analysis and Nuclear Waste Hydrology. Reductions are also proposed in the Federal/State Cooperative Program and State Water Resources Research Institutes and Grants subactivities.

The General Administration activity proposes increased funding for the excellence in education, women and minorities and volunteer initiatives, and the Department's Take Pride in America program.

CONTRIBUTED FUNDS

Funds in this account, established in FY 1983, are provided by States, local governments, and private organizations. This appropriation, a permanent, indefinite, trust fund appropriation, makes these funds available to the Bureau to perform work desired mutually by the contributor and the Bureau. Research and development, information collection and analysis, and other technical activities and services are undertaken when they are of mutual interest and benefit the Bureau in accomplishing its mandated purposes.

EXPLORATION OF NATIONAL PETROLEUM RESERVE IN ALASKA

The National Petroleum Reserve in Alaska program for the exploration of the Reserve has been completed and demobilization has occurred. Obligations within this account were completed in FY 1989 for the $914.5 million program which began in 1974.

TELECOMMUNICATIONS

In FY 1986, the Geological Survey received authority to deposit all amortization fees resulting from providing telecommunications services into a special fund to remain available until expended for payment of replacement or expansion of telecommunications services. The Headquarters computer switchboard system is being upgraded over a three year period beginning in FY 1989.

OPERATION AND MAINTENANCE OF SURVEY QUARTERS

The Geological Survey has 15 quarters located at geomagnetic or seismic observatories. The operation and maintenance of these quarters, in the past, have been funded out of rental receipts which were credited to the Survey's annual SIR account. Under the provisions of Public Law 98-473, this new account was established to account for rental receipts which remain available until expended for operation and maintenance of these quarters.

Authorizations

The Geological Survey's basic authorization for Surveys, Investigations, and Research (SIR) is included in an Act of March 3, 1879 (43 U.S.C. 31). The basic authority, although brief, is very broad in scope as follows:

"The Director of the Geological Survey, which office is established under the Interior Department, shall be appointed by the President by and with the advice and consent of the Senate. This officer shall have the direction of the Geological Survey, and the classification of the public lands and examination of the geologic structure, mineral resources, and products of the national domain. The Director and members of the Geological Survey shall have no personal or private interests in the land or mineral wealth of the region of the survey, and shall execute no surveys or examinations or private parties or corporations."

Appropriation Summary Statement

Appropriation: Surveys, Investigations, and Research

The programs of the Geological Survey are designed to provide basic scientific data and analyses concerning water, land, energy, and mineral resources. The programs and missions included in the SIR appropriation are conducted through three operating units: the National Mapping, Geologic, and Water Resources Divisions. There are two support service divisions, the Administrative Division and the Information Systems Division.

The FY 1991 estimate totals $506,578,000, an increase of $16,422,000 compared to the FY 1990 adjusted appropriation of $490,156,000. This net increase is comprised of three parts: (1) $44,229,000 in programmatic increases, (2) $518,000 as a net decrease resulting from adjustments to base costs, and (3) $27,289,000 in program decreases which partially funds both the high priority program and fixed cost increases. The FY 1991 base includes the following adjustments: (1) +$6,553,000 for the FY 1990 impact of P.L. 99-177, (2) -$2,468,000 for administrative efficiency, (3) -$1,921,000 for staffing efficiency, (4) +$3,409,000 for the additional cost in FY 1991 for the FY 1991 pay raise, (5) +$560,000 for increased costs for compensation to employees for injuries incurred in the course of performing official duties, (6) +$51,000 for increased costs of unemployment compensation claims, (7) +$2,267,000 for increased costs payable to GSA resulting from higher rates for office and non-office space, (8) +$1,694,000 for the increase in estimated retirement costs resulting from the continuing growth in the relative proportion of FERS employees in the bureau work force, (9) +$108,000 for increased costs of the Departmental Working Capital Fund, (10) +$1,208,000 for the increase in personnel compensation resulting from one more paid day in FY 1991 than in FY 1990, (11) +$21,000 for the increased costs of fostering a drug free workplace, and (12) -$12,000,000 for adjustment related to the Dire Emergency Supplemental for earthquake studies.

National Mapping, Geography, and Surveys--The budget provides for continuation of the National Mapping Program which has objectives to produce and make available cartographic and geographic information, multipurpose maps such as topographic, land-use/land-cover, and various base and special purpose maps, and basic cartographic and geographic data in printed and digital format to meet the continually expanding needs of the Nation. In addition, the USGS has been assigned all coordinating responsibility for mapping and digital cartographic activities for civilian agencies.

Proposed increases from the base level for FY 1991 in this budget activity total $18,600,000 and are as follows. The increase in the Advanced Cartographic Systems program will continue the multiyear development and acquisition effort to accomplish the transition to the most currently available technology in automated cartographic capacity which will significantly reduce unit costs and enable an expanded production level (+$14,500,000). The increase in the Global Change Data Systems program will expand the design and development of the Land Data and Information Management System (+$2,000,000); enhance support of the collection, compilation, mapping, and evaluation of pilot data sets (+$2,000,000); and will provide support to the Interagency Working Group on Data Management for Global Change (+$100,000). Proposed decreases from the base level for FY 1991 in this budget activity total $5,987,000. No funding is proposed for the Side-Looking Airborne Radar program because the technology has been demonstrated and applications data can be readily acquired from the private sector. Support in other programs (Cartographic Data and Map Revision; Thematic and Special Data; National Data Base Management; and Geographic and Spatial Information Analysis) is continued at reduced levels compared to the FY 1991 base to partially offset programmatic and fixed cost increases.

Geologic and Mineral Resource Surveys and Mapping--The budget provides for the continuation of the national program of geologic research and investigations which produces: 1) new and improved methods, techniques, and instruments for mineral and energy resource assessments on land and seaward through the Exclusive Economic Zone, including the submerged continental margins; 2) geologic, geophysical, and geochemical maps and analyses that show the distribution, age, composition, structure, and physical properties of the rocks and mineral deposits at and beneath the surface of the Earth, including the continental shelves and slopes; 3) information on the chemistry and physics of the Earth, its climate, and the geologic processes by which the Earth was formed and is being continually modified; 4) information on geologic hazards such as earthquakes, volcanos, landslides, and land subsidence which affect human safety, urban development, and the engineering design of sensitive structures including nuclear reactors and defense facilities, as well as public facilities in urban areas; and 5) data and analysis for use by other Federal and State agencies in the management of Federal lands, wilderness studies, and multiuse planning, and in national policy determinations including energy development and mineral resource availability. The FY 1991 budget presents this activity with name changes in the following programs (Coastal and Wetlands Processes, Uranium and Radon Investigations, and World Energy Resource Assessment) to better describe the scientific research and programmatic efforts being carried out.

Proposed increases from the base level for FY 1991 in this budget activity total $7,950,000 and are as follows. The increase to the Climate Change program will permit expansion of efforts in ancient climate, polar climate, and arid regions climate research and will begin efforts in biogeochemical and volcanic emissions research (+$6,700,000). The data provided by these research efforts is vital for the calibration and evaluation of climatic predictions being made from current General Circulation Models. The increase in the Evolution of Sedimentary Basins program will provide independent, unbiased information on U.S. domestic energy resource base required by the Department of Energy to meet their Presidential directive to develop a National Energy Strategy and begin development of a national energy endowment assessment program (+$1,250,000). Proposed decreases from the base level for FY 1991 in this budget activity total $7,776,000. The decrease in funding for the Earthquake Hazards Reduction program results from the one-time nature of the funding provided to this program under the FY 1990 Dire Emergency Supplemental to Meet the Needs of Natural Disasters of National Significance, P.L. 101-130. Support in other programs (Coastal and Wetlands Processes; National Mineral Resource Assessment Program; Coal Investigations; Oil and Gas Investigations; Uranium and Radon Investigations; and Geothermal Investigations) is continued at reduced levels compared to the FY 1991 base to partially offset programmatic and fixed cost increases.

Water Resources Investigations--The continuing national program of water resources investigations has the objective of assuring that the Nation's water resources are appraised and that the water data necessary to develop and manage them efficiently and effectively are available when needed. The program produces data, information, and analysis on the flow and sediment discharge of rivers; location and quantity of underground water; chemical quality and temperature of water; changes caused by nature and by man; and availability, suitability, and use of water for present and future demands-- all of which are essential to water planning, water management, energy development and enhancement of the quality of the environment. Included in the program is research needed to increase the understanding of fundamental principles of water occurrence, movement, and interaction with its environment, and also to improve the accuracy and usefulness of water data through improvements in technology and methodology. The FY 1991 budget presents this activity with name changes in the following programs (National Water Information Clearinghouse and Global Change Hydrology) to better describe the scientific research and programmatic efforts being carried out. In the Federal/State Cooperative program, the Coal Hydrology program has been included within the Data Collections and Analysis, Areal Appraisals, and Special Studies budget, because most water quality projects have become increasingly multipurpose making it difficult to exclusively differentiate projects as being coal hydrology.

Proposed increases from the base level for FY 1991 in this budget activity total $16,000,000 and are as follows. The increase in the National Water- Quality Assessment program will assist in defining the factors influencing the quality of the Nation's surface-water and ground-water, including non-point sources of water-quality problems such as those associated with agricultural activities (+$11,000,000). This proposal, which is part of the President's Water Quality initiative, will begin a multiyear transition to a full-scale National Water Quality Assessment program. The increase in the Climate Change Hydrology program will expand research activities focusing on how climate variability and change affect, and are affected by, hydrologic processes; the development of methods for evaluating the sensitivity of diverse surface-water and ground-water systems to changing climatic conditions; and the processes associated with the generation and disposition of naturally occurring greenhouse gases (+$5,000,000) resulting in a net increase of $4,200,000 in the focused water resources research program. Proposed decreases from the base level for FY 1991 in this budget activity total $13,526,000. Support in the Federal Program (Data Collection and Analysis; National Water Information Clearinghouse; Regional Aquifer System Analysis; and Toxic Substances Hydrology), the Federal/State Cooperative Program, and the Institutes and Research Grants Program is continued at reduced levels compared to the FY 1991 base to partially offset programmatic and fixed cost increases.

General Administration--General administrative expenses provide for management, executive direction and coordination, and administrative support. This includes such essential functions as budget, program formulation and evaluation, finance, personnel, and contract negotiation. General administrative expenses are financed in part by Geological Survey budget line items and in part by recouping costs from other Federal agencies and sundry non-Federal sources.

Proposed increases from the base level for FY 1991 in this budget activity total $1,679,000. The increase in Executive Direction will carry out the following initiatives: Take Pride in America to encourage volunteer stewardship of America's natural resources (+$79,000); Volunteerism to increase the amount of citizen volunteer time on behalf of America's public lands (+$400,000); Excellence in Education to support the President's goal of raising the standard of education in America (+$500,000); and Women and Minorities to enhance the recruitment, training, and advancement within the Geological Survey of women and minorities (+$700,000).

Facilities--The funds included in this activity finance the operation and maintenance costs, facilities management needs and related special support services necessary for the operation of the National Center Headquarters Complex and major field centers.

Reimbursements from non-Federal sources are from States and municipalities for making cooperative topographic and geologic surveys and water resources investigations (43 U.S.C. 48); proceeds from sale to the public of copies of photographs and records (43 U.S.C. 450); proceeds from sale of personal property (40 U.S.C. 481(c)); reimbursements from permittees and licensees of the Federal Energy Regulatory Commission (16 U.S.C. 797). Reimbursements from other Federal agencies (31 U.S.C. 686) are for special-purpose mapping, investigations, and computer services performed at the request of the financing agency, much of which contributes to the basic objectives of the Geological Survey. Also, reimbursements are received through the State Department from friendly countries and international organizations for scientific and technical assistance (22 U.S.C. 2357).

Telecommunications Amortization Fund--In FY 1986, the Geological Survey received authority to deposit all amortization fees, resulting from providing telecommunication services, into a special fund. Amounts deposited into the fund are available until expended for payment of replacement or expansion of telecommunications services. In FY 1990 and 1991, the Geological Survey will be procuring an upgraded switchboard for the Headquarters complex.

GEOLOGICAL SURVEY

Federal Funds

General and special funds:

SURVEYS, INVESTIGATIONS, AND RESEARCH

For expenses necessary for the Geological Survey to perform surveys, investigations, and research covering topography, geology, hydrology, and the mineral and water resources of the United States, its Territories and possessions, and other areas as authorized by law (43 U.S.C. 31, 1332 and 1340); classify lands as to their mineral and water resources; give engineering supervision to power permittees and Federal Energy Regulatory Commission licensees; administer the mineral exploration program (30 U.S.C. 641); and publish and disseminate data relative to the foregoing activities; [$484,709,000] $506,578,000, of which [$59,783,000] $56,147,000, shall be available only for cooperation with States or municipalities for water resources investigations: *Provided*, That no part of this appropriation shall be used to pay more than one-half the cost of any topographic mapping or water resources investigations carried on in cooperation with any State or municipality. *(Department of the Interior and Related Agencies Appropriations Act, 1990.)*

DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY
Appropriation: Surveys, Investigations, and Research

Appropriation language and citations:

1. For expenses necessary for the Geological Survey to perform surveys, investigations, and research covering topography, geology, and the mineral and water resources of the United States,

43 U.S.C. 31(a)

43 U.S.C. 31(a) provides for establishment of the Office of the Director of the Geological Survey, under the Interior Department, and that this officer shall have direction of the Geological Survey, and the classification of the public lands and examination of the geological structure, mineral resources, and products of the national domain.

2. Its Territories and possessions, and other areas as authorized by law.

43 U.S.C. 31(b)
43 U.S.C. 1332(a)
43 U.S.C. 1340

43 U.S.C 31(b) provides that, "The authority of the Secretary of the Interior, exercised through the Geological Survey of the Department of the Interior, to examine the geological structure, mineral resources, and products of the national domain, is expanded to authorize such examinations outside the national domain where determined by the Secretary to be in the national interest."

43 U.S.C. 1332(a) provides that, "It is the declared policy of the United States, that the subsoil and seabed of the Outer Continental Shelf appertain to the United States and are subject to its jurisdiction, control, and power of disposition as provided in this subchapter."

43 U.S.C. 1340 provides that, "Any agency of the United States and any person authorized by the Secretary may conduct geological and geophysical exploration in the Outer Continental Shelf. ..."

3. Classify lands as to their mineral and water resources;

43 U.S.C. 31(a)

43 U.S.C. 31(a) provides that, "The Director of the Geological Survey, ... shall have the direction of the Geological Survey, and the classification of public lands and examination of the geological structure, mineral resources, and products in the National domain. ..."

4. give engineering supervision to power permittees

43 U.S.C. 959, 961

43 U.S.C. 959 provides that, "The Secretary of the Interior is authorized and empowered, ... to permit the use of right of way through the public lands, forest, and other reservations of the United States ... for electrical plants, poles, and lines for the generation and distribution of electrical power, ...Provided, that such permits shall be allowed within or through any of said parks or any forest, military, Indian, or other reservation only upon approval of the Chief Officer of the Department under whose supervision such park or reservation falls and upon a finding by him that the same is not incompatible with the public interest ..."

43 U.S.C. 961 provides that, "The head of the department having jurisdiction over the lands be, and he is, authorized and empowered, ... to grant an easement for right of way, ... over, across and upon the public lands and reservations of the United States for electrical poles and lines for the transmission and distribution of electrical power ... upon a finding by him that the same is not incompatible with the public interest ..."

5. and Federal Energy Regulatory Commission licensees;

16 U.S.C. 797(c)

16 U.S.C. 797(c) states that, "To cooperate with the executive departments and other agencies of States or National Governments in such investigations; and for such purposes the several departments and agencies of the National Government are authorized and directed upon the request of the commission, to furnish such records, papers and information in their possession as may be requested by the commission, and temporarily to detail to the commission such officers or experts as may be necessary in such investigations."

6. administer the minerals exploration program;

30 U.S.C. 641

30 U.S.C. 641 provides that, "The Secretary of the Interior is hereby authorized and directed, in order to provide for discovery of additional domestic mineral reserves, to establish and maintain a program for exploration by private industry within the United States, its territories and possessions for such minerals, excluding organic fuels, as he shall from time to time designate, and to provide Federal financial assistance on a participating basis for that purpose."

7. and publish and disseminate data relative to the foregoing activities;

43 U.S.C. 41
44 U.S.C. 1318
44 U.S.C. 1320

43 U.S.C. 41 provides for the publication of geological and economic maps, illustrating the resources and classification of the lands, and reports upon general and economic geology and paleontology. This section also provides for the scientific exchange and sale of such published material.

44 U.S.C. 1318 provides for publication, by the Geological Survey, of various reports, including a report of mineral resources of the United States, bulletins and professional papers, and monographs. This section also specifies, in some instances, numbers of copies to be printed and the distribution thereof.

44 U.S.C. 1320 provides for the distribution by the Director of the Geological Survey of copies of sale publications to public libraries.

8. Provided, That (   ) shall be available only for cooperation with States or municipalities for water resources investigations:

43 U.S.C. 48

43 U.S.C. 48 provides that, "...amounts received by the Geological Survey from any State, Territory or political subdivision thereof in carrying on work involving cooperation to be used in reimbursing the appropriation from which the expense of such work was paid, was from the act making appropriations for the Department of the Interior for the fiscal year ending June 30, 1928, and for other purposes, act January 12, 1927, ch. 277, 1, 44 Stat. 963, and has not been repeated in subsequent appropriation acts."

> Similar provisions were contained in the following act: 1926--May 10, 1926, ch. 277, 1, 44 Stat. 487.

9. Provided further, That no part of this appropriation shall be used to pay more than one-half the cost of any topographic mapping or water resources investigations carried on in cooperation with any State or municipality.

43 U.S.C. 50

43 U.S.C. 50 provides that, "The share of the Geological Survey in any topographic mapping or water resources investigations carried on in cooperation with any State or municipality shall not exceed 50 per centum of the cost thereof. ..."

Permanent authority,

P.L. 98-146
Department of the Interior and Related Agencies Appropriations Act, 1984

10. Provided further, that in fiscal year 1984 and thereafter, all receipts from the sale of maps sold or stored by the Geological Survey shall be available for map printing and distribution to supplement funds otherwise available, to remain available until expended.

P.L. 99-190
Department of the Interior and Related Agencies Appropriations Act, 1986

11. Provided further, That in fiscal year 1986 and thereafter, all amortization fees resulting from the Geological Survey providing telecommunications services shall be deposited in a special fund to be established on the books of the Treasury and be immediately available for payment of replacement or expansion of telecommunications services, to remain available until expended.

P.L. 99-500 and P.L. 99-591, section 101(h),
Department of the Interior and Related Agencies Appropriations Act, 1987

12. Provided further, that, heretofore and hereafter, in carrying out work involving cooperation with any State, Territory, possession, or political subdivision thereof, the Geological Survey may, notwithstanding any other provisions of law, record obligations against accounts receivable from any such entities and shall credit amounts received from such entities to this appropriation.

13. Provided further, That in Fiscal Year 1987 and thereafter the Geological Survey is authorized to accept lands, buildings, equipment, and other contributions from public and private sources and to prosecute projects in cooperation with other agencies, Federal, State, or private.

This authority for contributions was in the appropriation language annually from FY 1983 through FY 1986 and was made permanent in FY 1987.

P.L. 100-446
Department of the Interior and Related Agencies Appropriations Act, 1989

14. Provided, That upon enactment of this Act and hereafter, final costs related to the National Petroleum Reserve in Alaska may be paid from available prior year balances in this account.

Summary of Requirements

Appropriation: Surveys, Investigations, and Research

(Dollar amounts in thousands)

	FTE/T	Amount	FTE/T	Amount
Appropriations enacted, 1990			7354	484709
Reduction pursuant to P.L. 99-177				-6553
Transferred from other accounts				12000
Adjusted Appropriation, 1990			7354	490156
Adjustments to base:				
Adjustment for 1990 Impact of P.L. 99-177*	--	6553		
Adjustment for Administrative Efficiency	--	-2468		
Adjustment for Staffing Efficiency	-36	-1921		
Additional Cost in 1991 for the 1991 Pay Raise	--	3409		
Adjustment for Workers Compensation Payments	--	560		
Adjustment for Unemployment Compensation Payments	--	51		
Adjustment for Rental Payments to GSA	--	2267		
Adjustment for CSRS/FERS Retirement Cost	--	1694		
Adjustment for Departmental Working Capital Fund	--	108		
Adjustment for Drug Free Workplace	--	21		
Adjustment for One Additional Paid Day in FY 1991	--	1208		
Adjustment for P.L. 101-130, Section 108	--	-12000		
Total adjustments to base			-36	-518
1991 BASE BUDGET			7318	489638
Program Changes (Changes to base budget)			25	16940
TOTAL REQUIREMENTS (1991 Estimate)			7343	506578

Summary of Requirements (continued)

Comparison by Activities/ Subactivities:	1989 Actual FTE-T	1989 Actual Amount	1990 Enacted to Date FTE-T	1990 Enacted to Date Amount	PL 99-177* Reduction Amount	1990 Adjusted Approp. Amount	1991 Base FTE-T	1991 Base Amount	1991 Estimate FTE-T	1991 Estimate Amount	Inc(+)/Dec(-) from 1990 Appropriation FTE-T	Inc(+)/Dec(-) from 1990 Appropriation Amount	Inc(+)/Dec(-) from 1990 Adjusted Approp.	Inc(+)/Dec(-) from 1991 Base FTE-T	Inc(+)/Dec(-) from 1991 Base Amount
National Mapping, Geography And Surveys:															
Nat'l map & digital data production	1065	46213	1046	46616	-631	45985	1038	47515	1013	43494	-33	-3122	-2491	-25	-4021
Information & data systems	243	11729	242	14798	-200	14598	242	14987	247	18018	5	3220	3420	5	3031
Research & technology	239	18577	231	18599	-251	18348	231	18760	230	17863	-1	-736	-485	-1	-897
Advanced Cartographic Systems	22	17716	30	33020	-446	32574	30	32896	60	47396	30	14376	14822	30	14500
Subtotal	1569	94235	1549	113033	-1528	111505	1541	114158	1550	126771	1	13738	15266	9	12613
Geologic and Mineral Resource Surveys and Mapping:															
Geologic hazards surveys	637	48390	643	48609	-659	47950	633	48766	633	48766	-10	157	816	0	0
Geologic framework & processes	306	28385	327	33330	-449	32881	327	33356	340	36956	13	3626	4075	13	3600
Offshore geologic surveys	341	26583	349	26814	-364	26450	349	26936	349	26936	0	122	486	0	0
Mineral resource surveys	751	47518	758	47477	-641	46836	755	47873	755	46373	-3	-1104	-463	0	-1500
Energy geologic surveys	448	27323	447	27475	-371	27104	447	27716	447	25790	0	-1685	-1314	0	-1926
Subtotal	2483	178199	2524	183705	-2484	181221	2511	184647	2524	184821	0	1116	3600	13	174
Water Resources Investigations:															
Nat'l water resources res. & info. system-Federal Prog.	1416	75600	1404	81320	-1099	80221	1404	82044	1456	94340	52	13020	14119	52	12296
Nat'l water resources res. & info. system-Fed/State Prog.	1516	58900	1486	59783	-809	58974	1471	60416	1425	56147	-61	-3636	-2827	-46	-4269
Nat'l water resources res. & info. system-State research institutes & research grants program	9	10821	9	10826	-146	10680	9	10782	7	5229	-2	-5597	-5451	-2	-5553
Subtotal	2941	145321	2899	151929	-2054	149875	2884	153242	2888	155716	-11	3787	5841	4	2474

Summary of Requirements (continued)

Comparison by Activities/ Subactivities:	1989 Actual FTE-T	1989 Actual Amount	1990 Enacted to Date FTE-T	1990 Enacted to Date Amount	PL 99-177* Reduction Amount	1990 Adjusted Approp. Amount	1991 Base FTE-T	1991 Base Amount	1991 Estimate FTE-T	1991 Estimate Amount	Inc(+)/Dec(-) from 1990 Appropriation FTE-T	Inc(+)/Dec(-) from 1990 Appropriation Amount	Inc(+)/Dec(-) from 1990 Adjusted Approp.	Inc(+)/Dec(-) from 1991 Base FTE-T	Inc(+)/Dec(-) from 1991 Base Amount
General Administration:															
Executive Direction	66	4732	72	4765	-64	4701	72	4904	72	6583	0	1818	1882	0	1679
Administrative Operations	278	9960	281	11629	-158	11471	281	11759	280	11759	-1	130	288	-1	0
Reimbursements to the Department of Labor	0	1638	0	1935	-26	1909	0	2546	0	2546	0	611	637	0	0
Subtotal	344	16330	353	18329	-248	18081	353	19209	352	20888	-1	2559	2807	-1	1679
Facilities:															
National Center - Rental payments to GSA	0	14524	0	14810	-200	14610	0	15452	0	15452	0	642	842	0	0
National Center - Fac. Mgmt	29	2897	29	2903	-39	2864	29	2930	29	2930	0	27	66	0	0
Subtotal	29	17421	29	17713	-239	17474	29	18382	29	18382	0	669	908	0	0
Total Requirements	7366	451506	7354	484709	-6553	478156	7318	489638	7343	506578	-11	21869	28422	25	16940

*Does not include $879,000 proposed to be sequestered in FY 1990 from the Federal Water Program in lieu of non-Federal cooperative program outlays.

Justification of Adjustments to Base
(Dollars in thousands)

	FTE	Amount
Appropriation: Surveys, Investigations, and Research		
Adjustment for 1990 Effect of P.L. 99-177	--	+6,553

The Balanced Budget and Emergency Deficit Control Act of 1985 (P.L. 99-177), as amended, required a reduction in non-exempt programs in FY 1990. Since the reduction applies to FY 1990 only, this adjustment is made to allow a more comparable basis for showing program changes from FY 1990 to FY 1991. An additional $879,000 is proposed to be sequestered in FY 1990 from the Federal Water program in lieu of non-Federal cooperative program outlays.

Adjustment for Administrative Efficiency	--	-2,468

The Department is proposing to decrease spending for consultants, travel, overtime, supplies, and equipment by about 5 percent to improve administrative efficiency and place greater priority on 1990 program initiatives. Specific reductions are proposed in the following areas:

Consultants	-3
Travel	-523
Overtime	-156
Supplies	-871
Equipment	-915
Total	-2,468

Adjustment for Staffing Efficiency	-36	-1,921

Savings are proposed from a planned reduction in the average grade achieved by filling vacant positions at an average of one grade lower than previously filled and from taking into account an expected additional lapse of 30 days before filling positions that become vacant in 1991. Specific reductions follow:

Average Grade	-851
Lapse	-1,070
Total	-1,921

Additional cost in 1991 of the 1991 pay raise -- +3,409

The adjustment is for the additional amount needed in 1991 to cover 40 percent of the additional three quarter's cost of the estimated 3.5 percent pay raise effective in January 1991. Of this amount $3,354K is for the general schedule pay and $55K is for the wage board pay. The 1991 cost of the remaining 60 percent will be absorbed in FY 1991.

Workers Compensation Payments -- +560

The adjustment is for increased costs for compensation to injured employees to be paid to the Department of Labor, Federal Employees Compensation Fund, pursuant to 5 U.S.C. 8147(b) as amended by Public Law 94-273.

Unemployment Compensation Payments -- +51

The adjustment is for increased costs of unemployment compensation claims to be paid to the Department of Labor, Federal Employees Compensation Account in the Unemployment Trust Fund, pursuant to Public Law 96-499.

Rental Payments to GSA -- +2,267

The adjustment is for increased costs payable to GSA resulting from higher rates for office and non-office space.

CSRS/FERS Retirement Costs -- +1,694

The adjustment is for the increase in estimated retirement costs resulting from the continuing growth in the relative proportion of FERS employees in the bureau workforce.

Departmental Working Capital Fund -- +108

The adjustment is for increased costs assigned to the bureau for administrative services provided on a Departmentwide basis. In FY 1991, an adjustment will be made to provide separate identification of activities related to the safety and occupational health of employees, safety of contractor workforces, and public visitor safety. In addition, increased use of the health unit and the Human Resources Development center in Washington, D.C. is expected. These increases will be partially offset by adjustments for the Washington Interagency Telecommunications System (WITS) a Departmentwide basis.

One More Paid Day in FY 1991	--	+1,208

The increase in personnel compensation results from there being one more paid day in FY 1991 than in FY 1990.

Drug Free Workplace	--	+21

The adjustment is for increased costs of fostering a drug free workplace.

Public Law 101-130, Section 108	--	-12,000

The adjustment reflects the one time nature of transfer of funds from the Office of the President pursuant to Section 108 of P.L. 101-130. The supplemental funds have been used for one year studies and capital expenditures related to the October 17, 1989, Loma Prieta earthquake in California, for studies of the seismic risk in the mid-continent (New Madrid seismic zone) and other areas of the United States. A center for earthquake studies is also planned in Southern California.

U.S. GEOLOGICAL SURVEY
Activity Summary
Surveys, Investigations, and Research
(Dollars amounts in thousands)

Activity	1989 Actual	1990 Approp. Enacted	1990 Adjusted Approp.	1991 Base	1991 Estimate	Inc. (+) Dec. (-) from Base
National Mapping, Geography & Surveys	94235	113033	111505	114158	126771	12613
Geologic & Mineral Resource Surveys & Mapping	178199	183705	181221	184647	184821	174
Water Resources Investigations	145321	151929	149875	153242	155716	2474
General Administration	16330	18329	18081	19209	20888	1679
Facilities	17421	17713	17474	18382	18382	0
TOTAL, SIR	451506	484709	478156	489638	506578	16940

U.S. GEOLOGICAL SURVEY
Analysis by Subactivity

Activity: National Mapping, Geography and Surveys

(Dollars amounts in thousands)

Subactivity	1989 Actual	1990 Approp. Enacted	1990 Adjusted Approp.	1991 Base	1991 Estimate	Inc. (+) Dec. (-) from Base
National Map & Digital Data Production	46213	46616	45985	47515	43494	-4021
Information & Data Systems	11729	14798	14598	14987	18018	3031
Research and Technology	18577	18599	18348	18760	17863	-897
Advanced Cartographic Systems	17716	33020	32574	32896	47396	14500
TOTAL	94235	113033	111505	114158	126771	12613

Activity Summary

Activity: National Mapping, Geography and Surveys

The National Mapping Program provides a diversity of cartographic, geographic, and remotely sensed data, products, and services in support of Federal, State, and public interests. These products and services include information about the Earth's natural and cultural features, base and special maps in several scales, digital cartographic data, remotely sensed data, and cartographic and geographic information. Cartographic data are compiled from aerial photographs, other remotely sensed images, historical records, legal documents, and direct field observations and surveys and comply with standards of content, geometric accuracy, and presentation. Research is also conducted in the mapping sciences, geography, and related disciplines.

The production of digital cartographic data and graphic products comprises the largest component of the National Map and Digital Data Production subactivity. New and revised maps are prepared by compiling natural and manmade features from aerial photographs, satellite images, and other source materials. State-of-the-art digital and analog cartographic and photogrammetric equipment are used in this process. Data produced using such equipment are combined with other information such as boundaries, place names, and road classifications derived from field surveys and research of official documents. Categories of information comprising a map are depicted on individual overlays, which, when combined and printed, result in multicolor maps in graphic form. These same categories of data such as boundary, hydrography, hypsography (contours), transportation, Public Land Survey System, vegetation, cultural features, and elevation data representing the terrain are also digitized and made available in computer readable form from the National Digital Cartographic Data Base (NDCDB). Graphic and digital land-use and land-cover data are produced to assist the Nation's managers, planners, and developers in making decisions about the Nation's natural resources. Remotely sensed data, such as aerial photographs and satellite images, are processed, archived, and distributed.

The Information and Data Systems subactivity provides a national clearinghouse service for cartographic, geographic, and earth science information through its Earth Science Information Centers and responds to national requirements to deliver this information to a community of Federal, State and local Government agencies and general public users. Functions performed include the archiving, management, replication, and distribution of cartographic and geographic information in many forms, and responding to requests for earth science information. These efforts support the significant increase in the use of digital cartographic data and the need for a base level of earth science data to measure global change.

The Research and Technology subactivity encompasses cartographic and geographic research and development, requirements, coordination, standards, and applications activities that (1) support cartographic production and related operations; (2) support the coordination of the National Mapping Program at the Federal and State level, including coordination of remote sensing activities and development and promulgation of cartographic and earth-science data standards; and (3) develop digital Geographic Information Systems, as well as spatial data applications that can also be used by other Federal agencies.

The Advanced Cartographic Systems subactivity represents a multiyear effort to modernize and expand the capability of the USGS to produce map products more efficiently in graphic and digital form through the procurement of advanced, computer assisted, cartographic equipment, and through the development of innovative software techniques and procedures.

In addition to supporting the programs described above, funds appropriated to National Mapping, Geography and Surveys provide for the general management of the National Mapping Program. Funds appropriated to this activity also contribute to the general administrative expenses of the U.S. Geological Survey based on program service costs ($2,981,000). Global Change program coordination activities and Committee on Earth Sciences responsibilities within the Executive Direction subactivity are also supported within this activity ($89,000).

Justification of Program and Performance

Activity: National Mapping, Geography, and Surveys
Subactivity: National Map & Digital Data Production

(Dollar amounts in thousands)

Program Elements		1990 Enacted to Date	1990 Adjusted Approp.	1991 Base	1991 Estimate	Inc.(+) Dec.(-) from Base
Cartographic Data & Map Revision	$	40594	40044	41432	40554	-878
	FTE-T	954		946	938	-8
Thematic & Special Data	$	4522	4461	4583	2940	-1643
	FTE-T	92		92	75	-17
Side Looking Airborne Radar	$	1500	1480	1500	0	-1500
	FTE-T	0		0	0	0
Total Requirements	$	46616	45985	47515	43494	-4021
	FTE-T	1046		1038	1013	-25

Impact of Public Law 99-177	1990 Enacted to Date	PL 99-177 B.A. Cancellation	1990 Adjusted Approp.
National Map & Digital Data Production	46616	-631	45985

This reduction will delay the revision of 20 primary maps and 70 orthophotographic products per year for Federal, State, and private sector users.

Authorization

43 U.S.C. 31 et. seq.	Director of Geological Survey - Establishment of office. This section provides, among others, that the Geological Survey is directed to classify the public lands and examine the geological structure, mineral resources, and products within and outside the national domain.
43 U.S.C. 38	Topographic surveys; marking elevations. This section provides for the establishment and location of permanent benchmarks used in the making of topographic surveys.

43 U.S.C. 41	Publications and reports; preparation and sale. This section provides that the publications of the Geological Survey shall consist of geological and economic maps illustrating the resources and classification of lands and other reports.
43 U.S.C. 45	Production and sale of copies of photographs and records. This section authorizes the Geological Survey to produce and sell on a reimbursable basis, copies of aerial or other photographs, mosaics, and other official records.
43 U.S.C. 49	Extension of cooperative work to Puerto Rico. This section authorizes the making of topographic surveys in Puerto Rico by the Geological Survey.
43 U.S.C. 1318	Geological Survey; classes and sizes of publications. This section requires that publications of the Geological Survey shall include maps, folios, and atlases required by law. This Section further provides for printing and reprinting of Geological Survey reports and distribution to Congress and the Library of Congress.

Cartographic Data and Map Revision

Objectives: To provide current and accurate cartographic data and maps that meet consistent standards in primary, intermediate, and small scales for the United States and outlying areas of jurisdiction. The national value of these cartographic data lies in their currentness and accuracy, which are essential for continued effective utilization by Federal, State, and local government and public sector decisionmakers and the general public. Advanced techniques are applied in collecting and processing current cartographic data that provide a comprehensive source of standard digital cartographic data for entry into the National Digital Cartographic Data Base (NDCDB) and for the preparation and revision of maps and derivative map products.

Base Program: Primary map scales are principally 1:24,000 in the conterminous States and Hawaii (nearly 54,000 quadrangles) and 1:63,360 in Alaska (about 2,800 quadrangles); intermediate scales are 1:50,000 and 1:100,000; and small scales are 1:250,000 and smaller. Digital cartographic data are produced in two principal forms: digital line graphs (DLG's) and digital elevation models (DEM's). DLG's are digital files of linear features such as transportation, hydrography, hypsography (contours), boundaries, and the Public Land Survey System (PLSS). DLG's are produced from all primary map scales and 1:100,000-scale quadrangle maps. DEM's are three-dimensional arrays of points that represent differences in elevation of the terrain. Maps at these various scales and data sets produced from them are prepared in response to national priorities and to satisfy specific requirements of Federal and State Government agencies. These requirements are defined primarily through three established mechanisms:

- OMB Circular A-16 activities (described in National Cartographic Requirements, Coordination, and Standards program element) that result in prioritized requirements from 40 Federal agencies;

- jointly-funded programs with 32 States; and

- State Mapping Advisory Committees, in 29 States, which identify statewide requirements.

By correlating these identified needs with other national interests, the highest priority requirements of the Nation's major users of maps and cartographic data are addressed each year.

Primary Maps and Data: Primary cartographic data include 1:24,000- and 1:25,000-scale topographic maps and DLG's and 7.5-minute and 15-minute DEM's. In Alaska, primary maps are published and DLG's are digitized at 1:63,360 scale.

Primary maps of varying ages will be available for the entire conterminous United States by the close of FY 1990. Program emphasis is shifting to preserving the usefulness of these products by periodically revising maps to reflect recent natural and cultural changes and to correct deficiencies and inaccuracies in older maps. Periodic revisions are necessary to record cultural changes to the Earth's surface, such as new highways, urban expansion, industrial development, dams, reservoirs, impacts of surface mining, and changes caused by natural events such as erosion, accretion, floods, volcanoes, and earthquakes in order to provide the Nation's decisionmakers with accurate and timely maps and cartographic data. At the beginning of FY 1990, an estimated 24,000 of the Nation's 56,800 primary maps were in need of revision. In FY 1991, 1,225 primary maps will be revised.

To facilitate the map revision process, and in response to the changing needs of the large and diverse map user clientele, the Geological Survey is implementing new technologies to improve the content, accuracy, and timeliness of its graphic and digital cartographic products. Land and other resource applications are increasingly requiring digital cartographic data for automating spatial analyses through the use of computer-based geographic information systems (GIS). For example, the Soil Conservation Service uses 7.5-minute DEM's to produce special slope and aspect maps for soil studies and 1:24,000-scale DLG's for county and regional GIS projects; the National Coal Resources Data System, a user-oriented computerized storage, retrieval, and display system developed by the Geological Survey for coal resource quality and quantity assessment, uses 7.5-minute DEM's to automate volume computations; the Bonneville Power Administration is using 1:24,000-scale DLG's together with several thematic data sets in a GIS to study environmental data and to analyze hydropower development for rivers and streams in a four-State area of the Pacific Northwest. The National Mapping Program is in transition toward more timely map revision and digital cartographic data base development and automated product generation in order to respond to these changing national requirements.

Priority requirements for primary map graphics, DLG's, and DEM's identified through coordination meetings and responses to the annual OMB Circular A-16 process include:

- The Bureau of Land Management utilizes revised 1:24,000-scale topographic maps to manage public lands in areas of high oil, gas, and coal development. These maps are also the primary source for referencing geographic information in BLM's automated mapping system.
- The U.S. Forest Service is using revised 1:24,000-scale topographic maps to support the normal 7-year primary base revision cycle of forest mapping.
- The Fish and Wildlife Service is using revised 1:24,000-scale topographic maps to develop and implement a geographic information system and data base to assist in refuge planning and management.
- The Nuclear Regulatory Commission is using DLG's and DEM's in their study of the Yucca Mountain, NV, high level waste repository site.
- The Geological Survey is using DLG's and DEM's in the Parkfield, CA, earthquake prediction study.
- The Environmental Protection Agency, the Soil Conservation Service, the Corps of Engineers, and North Carolina State agencies are using DLG's in a variety of soils, wetlands, and pollution studies in the Albemarle and Pamlico Sound areas.
- The Bureau of Land Management, The Environmental Protection Agency, and the State of Montana are using DLG's in studies of Superfund sites in the Clark Fork Basin.
- The Department of Defense is using DEM's produced by the Geological Survey as source material in the production of digital terrain elevation data for use in navigational systems.
- DLG's and DEM's are being used to support Federal preexploration impact studies for the Arctic National Wildlife Refuge in Alaska.

Intermediate-scale Maps and Data: Intermediate-scale cartographic data and maps include topographic maps in quadrangle format at 1:100,000 scale and in county format at 1:50,000 and 1:100,000 scales that serve as accurate base maps appropriate for multipurpose regional planning. Also included are 1:100,000-scale DLG's and 30-minute DEM's. Base maps and hydrography and transportation DLG's have been completed for the entire conterminous United States.

In FY 1991, emphasis will be placed on revising existing base maps and including contours to produce topographic map editions. Complete topographic map coverage of the conterminous United States, for use as a comprehensive source of cartographic information required by many Federal and State agencies, is scheduled for the mid-1990's. Also, the contour data on the 1:100,000-scale topographic maps are being digitized. Resulting digital data will expand the utility of the NDCDB for decisionmaking about natural resource and other geographically related problems on a regional and national basis.

Priority requirements for intermediate-scale maps and data identified through coordination meetings and responses to the annual OMB Circular A-16 process include:

- The Bureau of Land Management, in implementing the Federal Land Policy and Management Act of 1976, is using 1:100,000-scale topographic maps as base maps for range and timber planning and for identifying surface and subsurface ownership of mineral lands for management activities.

- The Soil Conservation Service uses intermediate-scale maps to display resource data over 1.5 billion acres (about 2/3 of the United States) of non-Federal land.

- The Geological Survey makes use of intermediate-scale topographic base maps in its Coal Investigations Program, Cooperative Geologic Mapping Program, and for ground water and river basin studies. In association with the National Oceanic and Atmospheric Administration (NOAA), the Geological Survey produces topographic/bathymetric maps and data where bathymetric manuscripts are available.

- The Department of Energy has identified a requirement for most categories of 1:100,000-scale digital cartographic data of the conterminous United States to support tracking of the transportation of nuclear devices and radioactive material.

- The Defense Mapping Agency (DMA) has an ongoing requirement for 1-degree digital terrain elevation data. The USGS is pursuing a cooperatively funded program with DMA to produce this product through the collection and processing of 1:100,000-scale digital line graph data and 7.5-minute DEM's.

- Illinois and Kansas have an ongoing requirement for 1:100,000-scale county maps. The USGS is currently producing these maps in those States on a cooperatively funded basis.

Small-scale Maps and Data: Complete map coverage at 1:250,000 scale for the conterminous United States, Hawaii, and Alaska is provided by 634 maps. In FY 1991, 20 maps at 1:250,000 scale are planned for revision.

U.S. and State base maps are used by Federal, State, and local agencies, educational institutions, and the general public. Product users require revision of these bases for their use in accurately depicting thematic information.

This program includes a joint mapping effort with NOAA for the preparation of topographic/bathymetric 1:250,000-scale maps of coastal areas to provide support for the management of the coastal zone and the administration of the Outer Continental Shelf (OCS). This program also supports requirements of DMA for their 1:250,000-scale Joint Operations Graphic (both air and ground) Program.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adj.Approp.	FY 1991 Base	FY 1991 Estimate
Primary Maps and Data				
Map Revisions	719	720	1,225	1,225
Digital Elevation Models	2,240	3,190	3,200	2,900
Digital Line Graphs	2,867	4,500	4,500	3,800
Intermediate-Scale Maps and Data				
New Maps	94	85	85	85
Map Revisions	80	80	80	80
Digital Elevation Models	54	190	190	190
Digital Line Graphs	711	390	390	390
Small-Scale Maps and Data				
1:250,000-Scale Map Revisions	9	20	20	20
Digital Elevation Models (1° x 1°)	45	85	85	85
U.S. and State Base Maps	1	5	5	5

Decrease for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	41,432	40,554	-878
FTE	946	938	-8

This decrease will result in delays in the availability of additional base category digital cartographic data required by Federal agencies for integration with existing data at 1:24,000-scale. This funding decrease would reduce the production of 1:24,000-scale digital line graphs (DLG's) by 700 and 1:24,000-scale DEM's by 300. Some major agencies and applications likely to be negatively impacted include: The Bureau of Land Management's development of data bases for land resource management, the Bureau of Indian Affairs' reservation resource planning and management activities, and Soil Conservation Service and Forest Service production of special slope and aspect maps and GIS projects.

Distribution of change by object class:

The object class detail for the proposed $878,000 decrease is as follows:

	FTE	Amount
Personnel Compensation -------------------	8	$280,000
Personnel Benefits -----------------------		43,000
Travel and Transportation of Persons ------		15,000
Communication, Utilities, and Misc. Charges -------------------------		15,000
Other Services --------------------------		450,000
Supplies and Materials -------------------		75,000
Total ------------------------------	8	$878,000

Thematic and Special Data

Objectives: To provide photoimage map products meeting National Map Accuracy Standards, primarily orthophotoquads, in response to specific, identified requirements of State and Federal agencies, particularly the Bureau of Land Management, Soil Conservation Service, and Forest Service; to revise land-use and land-cover maps and produce digital data for public release at 1:250,000 scale nationwide and at 1:100,000 scale for selected areas; to produce statistical summaries of land-use and land-cover patterns; and to prepare thematic and special cartographic data and products to meet unique, often unanticipated requirements of Congress and Federal and State agencies. Special emphasis is now directed toward developing production procedures for quarter-orthophotoquads; completion of the digitizing of land-use and land-cover maps in the conterminous U.S.; preparing digital and graphic land cover products for Alaska in areas of greatest concern to Federal and State planning resource management agencies; and assisting Federal agencies and States in using land-use and land-cover data bases for GIS and related applications.

Base Program: Special map products are prepared using existing map bases and additional information collected from various sources, some of which are provided by the requesting organization. Special maps produced for government programs often have added benefits to the general public. For example, the Geological Survey, in cooperation with the National Park Service, prepares new and revised maps of park areas to support National Park management. These maps are also available for sales to park visitors and the general public.

Requests for special map products and services are numerous within any one fiscal year. A variety of small-scale reference and thematic maps, and related products are also prepared to meet the expressed needs of Congress and of analysts and policymakers in Federal, State, and regional agencies, as well as in the scientific community.

EXAMPLES OF SPECIAL MAPPING ACTIVITY

Product/Service	User/Uses
Classification of Timber and Vegetation types of the Los Padres National Forest	The U.S. Forest Service. Shows classification of timber and other vegetation types using Landsat Thematic Mapper data augmented by digital elevation models.
Topographic map detailing the Cholame earthquake area, Parkfield, California	The Geologic Division, USGS. A topographic map detailing the 1857 offset of a gully near Cholame, California, on the San Andreas fault. This is to assist the Geologic Division in dealing with a moderate earthquake forecast to occur on the San Andreas fault at Parkfield, California, before 1993.
Electing the President 1789-1988	Secretary of the Interior. A 16-page booklet of maps graphically portrays every presidential election. Maps for the elections of 1972 through 1988 show the winning candidate's percentage of total popular vote by county; for the 1796 through 1968 elections, maps show electoral vote by state. Changes in the nation's geographic and partisan voting patterns can be studied easily, making the publication suited for classroom use and for anyone interested in U.S. political history.
This Dynamic Planet: World Map of Volcanoes, Earthquakes, and Tectonics	The Geologic Division, USGS, and the Smithsonian Institution. Prepared for the 28th International Geological Congress and the concurrent Smithsonian-USGS volcano exhibit touring the country.
U.S.-Mexico Border Color Image Maps	The U.S. Customs Service. A series of 203 maps for researching locational patterns of illegal immigration and drug traffic. The photoimage maps are easier to use than are standard line maps.
Savannah River Nuclear Power Plant	The Nuclear Regulatory Commission. A topographic map for resolving environmental problems, for general planning purposes, and for managing the installation's grounds and equipment. It also serves as a visitor's guide and public relations tool.

Orthophotoquads, produced from aerial photographs, are photoimage map products meeting National Map Accuracy Standards. The Geological Survey produces orthophotoquads in the 7.5-minute quadrangle format (15-minute quadrangle format in Alaska) in response to specific requests submitted by many government agencies. The Bureau of Land Management uses orthophotoquads of selected areas in Alaska to support their work under the Alaska Native Claims Settlement Act of 1971 and the Alaska National Interest Lands Conservation Act of 1980. Other examples of orthophotoquad requirements include: the Bureau of Land Management for land and resource management; the Soil Conservation Service for soil classification; and the Forest Service for land and timber management. State governments also use these image products to aid in coastal area programs and local government planning and management activities. Orthophotoquads are also being prepared for the California Office of Emergency Services and the Forest Service under the FIRESCOPE program. These data aid fire and rescue efforts by the State.

A pilot project involving 1:12,000-scale quarter-orthophotoquads in Dane County, Wisconsin, was completed in FY 1989 for the Soil Conservation Service (SCS). The results of the project are being evaluated by SCS and the Agricultural Stabilization and Conservation Service (ASCS) for a possible future national requirement for ASCS to monitor farm field boundaries and to verify lands set aside for subsidies. Based on the success of the pilot project, SCS requested further 1:12,000-scale quarter-orthophotoquads to be produced for Delaware, Elkhart, Perry and Pulaski counties in Indiana. Another project entails the production of 748 quarter-orthophotoquads under a work-share agreement with the Forest Service (FS), U.S. Department of Agriculture. FS requires coverage over selected National Forests (namely Willamette, Winema, and Rogue River) in Oregon. The project is scheduled for FY 1991 completion.

The Geological Survey also produces and distributes specialized image map products. Improved techniques for processing remotely sensed data are used to tailor image maps to specific scales and areas, making them compatible with existing map bases. The image maps are used to update existing maps and can incorporate traditional printed map data with satellite or aircraft images.

The Geological Survey conducts the only systematic inventory of land-use and land-cover (LU/LC) data that is national in scope and features a uniform classification system portrayed at standard scales. The program provides maps and digital data for numerous Federal, State, and private sector activities related to land resource inventory, planning, and development. LU/LC maps and the associated map sets which depict political units, hydrologic units, census county subdivisions, and, when requested by State cooperators, areas of Federal and State land ownership are produced and made available through the Geological Survey's Open File System. Selected LU/LC maps are also available in published form. More than five hundred LU/LC maps, covering the entire conterminous U.S. and Hawaii, are available to the public. These maps are planned to be available in digital form along with associated digital data sets by the end of FY 1991. A State and Federal Cooperative program will continue to update these data in response to identified requirements.

As an alternative to the conventional LU/LC mapping used in the conterminous U.S., a digital approach to land-cover mapping, employing a multi-agency classification scheme, was tested in Alaska. Digital land-cover data and printed maps, classified from Landsat and ancillary digital data analysis, were produced and evaluated for six standard 1:250,000-scale quadrangles in Alaska. Based on the results of this initial pilot project, the Geological Survey is now producing the standardized Alaska land cover digital product for 6 to 10 quadrangles a year in areas of identified user interest.

EXAMPLES OF LAND-USE AND LAND-COVER DATA APPLICATIONS

User	Application
Department of Energy	Digital data are being used in support of acid rain impact studies, biomass estimate studies, coastal inundation impact modeling, and low-level waste siting and transport studies.
Environmental Protection Agency	Digital data are being used in support of nonpoint pollution source, estuarine water quality, acid rain, and river basin water quality studies, and for air quality modeling. The data are also being used in a GIS to develop nutrient transport models for the 64,000 sq mi Chesapeake Bay drainage area as part of the Chesapeake Bay Program.
USGS/Water Resources Division	Digital data are being used in support of National Water Quality Assessment (NAWQA) and in support of other water quality, water use, and toxic waste projects.
Fish and Wildlife Service	Landsat-derived land-cover data are being used in all Alaska Fish and Wildlife refuges for refuge management and habitat studies.
U.S. Forest Service	Digital data are being used in a nation-wide distribution analysis of land-cover types to model habitat and abundance levels for birds and other animals. EPA will use this analytical tool to model wetland species habitats.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adj.Approp.	FY 1991 Base	FY 1991 Estimate
Special Maps	40	40	40	40
Orthophotoquads	1,493	1,830	1,900	400
Land-Use and Land-Cover Maps	6	5	5	5
Land-Use and Land-Cover Digital Data Sets	40	25	5	5
LU/LC Associated Digital Data Sets	122	100	20	20

Decrease for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	4,583	2,940	-1,643
FTE	92	75	-17

This decrease will substantially reduce the Survey's ability to participate in various cooperative agreements with other Federal agencies, Soil Conservation Service and U.S. Forest Service in particular, to produce orthophotographic products. Annual orthophotoquad production will be reduced by 1500 units. These image products are the analytical tools used by various ongoing programs of the U.S. Department of Agriculture to support such efforts as soil surveys, soil conservation planning, watershed modelling, and fire control. The remaining program will continue to be responsive to high priority requirements of users nationwide.

Distribution of change by object class:

The object class detail for the proposed $1,643,000 decrease is as follows:

	FTE	Amount
Personnel Compensation --------------------	17	$ 595,000
Personnel Benefits -----------------------		85,000
Other Services ---------------------------		913,000
Supplies and Materials --------------------		50,000
Total ----------------------------------	17	$1,643,000

Side-Looking Airborne Radar (SLAR)

Objectives: To acquire, distribute, and use Side-Looking Airborne Radar (SLAR) data for resource assessment; these objectives are accomplished by:

- Acquiring and archiving SLAR data for the public domain.
- Producing and distributing high quality SLAR data for use by both private sector and government scientists and managers.

- Using SLAR data for geologic, hydrologic, cartographic, and engineering applications.

Base Program: The Side-Looking Airborne Radar (SLAR) program was initiated during FY 1980. Since its inception, the Geological Survey has acquired and archived for public use, SLAR data of areas within both the conterminous United States and Alaska. These areas were chosen by Geological Survey scientists after extensive review, including soliciting high priority acquisition sites from State Geological Surveys and other users. These areas usually have high potential for energy and mineral resources or are areas of earth-hazards investigations.

The Geological Survey increased its efforts in FY 1988 to promote use and sale of SLAR data currently in the public domain, by presenting technical reports at scientific symposia, publishing the results of SLAR investigations, preparing display panels for exhibit at professional conventions, producing diazo copies of the SLAR mosaics as an inexpensive means of introducing this data to earth scientists and students, and initiating experimental trials of Compact-Disk Read Only Memory (CD-ROM) as a SLAR digital distribution medium.

Decrease for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	1,500	0	-1,500
FTE	--	--	--

The proposed decrease will terminate Federal SLAR data acquisition and research addressing the applications of SLAR data. Sufficient SLAR data have been acquired and made available to the public to demonstrate their utility. In view of the significant funding required for additional SLAR data acquisition in competition with higher priority Geological Survey programs, no FY 1991 funds are requested. Additional SLAR data can be readily acquired by industry within the private sector without the expenditure of government funds.

Distribution of change by object class:

The object class detail for the proposed $1,500,000 decrease is as follows:

	Amount
Printing and Reproduction	$ 20,000
Other Services	1,450,000
Supplies and Materials	30,000
Total	$1,500,000

Justification of Program and Performance

Activity: National Mapping, Geography, and Surveys
Subactivity: Information & Data Systems

(Dollar amounts in thousands)

Program Elements		1990 Enacted to Date	1990 Adjusted Approp.	1991 Base	1991 Estimate	Inc.(+) Dec.(-) from Base
National Data Base Management	$	7767	7662	7880	6811	-1069
	FTE-T	141		141	141	0
Information Dissemination Services	$	4031	3977	4115	4115	0
	FTE-T	96		96	96	0
Global Change Data Systems	$	3000	2959	2992	7092	4100
	FTE-T	5		5	10	5
Total Requirements	$	14798	14598	14987	18018	3031
	FTE-T	242		242	247	5

Impact of Public Law 99-177

	1990 Enacted to Date	PL 99-177 B.A. Cancellation	1990 Adjusted Approp.
Information & Data Systems	14798	-200	14598

This reduction will result in 6 percent fewer non-Landsat image frames processed, archived, and distributed. Efforts to recruit private sector involvement in distribution of USGS products will be less aggressive.

Authorization

31 U.S.C. 97	Fees and Charges for Government Services and Things of Value. This section directs that each service or thing of value provided to a person be self sustaining to the extent possible. Further, the head of each agency may prescribe regulations establishing the charge for each service or thing of value. Each charge is to be fair, based on the costs to the Government or the value of the service or thing to the recipient, public policy or interest served, and other relevant facts.

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43 U.S.C. 31 et. seq.	Director of the Geological Survey - Establishment of office. This section provides, among others, that the Geological Survey is directed to classify the public lands and examine the geological structure, mineral resources, and products within and outside of the national domain.
43 U.S.C. 38	Topographic surveys; marking elevations. This section provides for the establishment and location of permanent benchmarks used in the making of topographic surveys.
43 U.S.C. 41	Publications and reports; preparation and sale. This section provides that the publications of the Geological Survey shall consist of geological and economic maps illustrating the resources and classification of lands and other reports.
43 U.S.C. 42	Distribution of maps and atlases, etc. This section authorizes and directs the Director of the Geological Survey, upon the approval of the Secretary of the Interior, to distribute topographic and geologic maps and atlases of the United States. The prices and regulations are to be fixed by the Director with the approval of the Secretary. This Section further provides that copies of each map or atlas, not to exceed five hundred, shall be distributed gratuitiously among foreign governments, departments of our own Government, literary and scientific associations, and to educational institutions or libraries.
43 U.S.C. 43	Copies to Senators, Representatives and Delegates. This section provides that one copy of each map and atlas shall be sent to each Senator, Representative, and Delegate in Congress, if published within his term, and that a second copy be placed at the disposal of each.
43 U.S.C. 44	Sale of transfers or copies of data. This section provides that the Geological Survey may furnish copies of maps to any person, concern, institution, State or foreign government.
43 U.S.C. 45	Production and sale of copies of photographs and records. This section authorizes the Geological Survey to produce and sell on a reimbursable basis copies of aerial or other photographs, mosaics, and other official records.

43 U.S.C. 49	Extension of cooperative work to Puerto Rico. This section authorizes the making of topographic surveys by the Geological Survey in Puerto Rico.
43 U.S.C. 1318	Geological Survey: classes and sizes of publications. This section requires that publications of the Geological Survey shall include maps, folios, and atlases required by law. This Section further provides for printing and reprinting of Geological Survey reports and distribution to Congress and Library of Congress.

National Data Base Management

Objectives: To archive, manage, and make available cartographic, remotely sensed, and other earth science data in digital and graphic data bases that are readily available to all potential users.

Base Program: Under this program the digital and graphic products, by-products, and source materials used in the production process for the National Map and Digital Data Production subactivity, other remotely sensed data, and earth science data sets are organized into data bases that can serve multiple purposes. Examples of data bases managed by the Geological Survey follow:

National Digital Cartographic Data Base:

The Geological Survey collects, prepares, and distributes digital cartographic data of standard levels of content, accuracies, and formats to meet specific high priority Federal requirements. These data provide the foundation and connecting link for other digital spatially referenced data in geographic information systems (GIS) that automate data manipulation, augment the number of data files that can be simultaneously analyzed, and improve the ability of scientists and managers to make informed and timely decisions. USGS organizes these data into a National Digital Cartographic Data Base (NDCDB) comprised of digital elevation models, digital line graphs for such categories as transportation, hydrography, Public Land Survey System, and boundaries, and land-use and land-cover data. Management of the NDCDB includes validation, archiving, maintenance, and distribution of the digital cartographic data.

Geographic Names Information System:

The Geological Survey is responsible for providing staff support for the Domestic Board on Geographic Names and compiles and maintains a national data repository of federally recognized geographic feature names and attribute information in support of the National Mapping Program. The Geographic Names Information System (GNIS) is an automated data system that provides locative and descriptive information for places, features, and areas in the United States identified by a proper name. GNIS furthers uniform name usage throughout the Federal Government in cooperation with State and local governments; provides an index of names found on Federal, State, and private maps; eliminates redundant resource expenditures in ad hoc attempts to organize similar data files throughout government, industry, and academia; supports standardization of geographic data formats for information exchange within the user community; and meets Federal public information requirements prescribed by law. The GNIS provides a standard reference source for information regarding domestic geographic names. The data can be analyzed and manipulated to meet specialized requirements or incorporated as a subset of composite geographic or multidisciplinary data systems. The system currently provides information on almost 2,000,000 geographic entities in the United States, its territories, and outlying areas. The system is continually expanded to include newly collected names and more detailed information on existing entries. Data are organized in three separate data bases: the National Geographic Names Data Base, the USGS Topographic Map Names Data Base, and the Reference Data Base.

National Uranium Resource Evaluation:

The Geological Survey is the depository of data that were produced by the Department of Energy's National Uranium Resource Evaluation (NURE) program. For compatibility with other USGS data sets, digital data for the conterminous 48 States are entered and retrieved in the format used by the Mineral Resources Data System.

Map Separates Tracking System:

A linked network of computers, this system is used to manage the inventory of original graphics from which the Geological Survey's primary topographic base maps were produced. The system will track more than five hundred thousand bar-coded graphics.

Image File:

The Geological Survey, through its EROS Data Center (EDC), manages the repository and public distribution of a continuously growing archive of over 6.5 million aerial photographs and images. These photographs, acquired by the Geological Survey, the National High Altitude Photography (NHAP) program, the National Aerial Photography Program (NAPP), the National Aeronautics and Space Administration (NASA), and other Federal agencies, serve as the basis for various mapping applications, resource and environmental management, crop studies, soils evaluation, and other activities. Images from Side-Looking Airborne Radar (SLAR) and NASA's Large Format Camera are also archived and distributed. The Geological Survey receives, archives, and distributes Advanced Very High Resolution Radiometer (AVHRR) data from National Oceanic and Atmospheric Administration (NOAA) polar orbiter satellites. These data products support land science applications for the Department of the Interior research and land management programs and other Federal agency research and applications.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adj.Approp.	FY 1991 Base	FY 1991 Estimate
NDCDB Files archived in gigabytes	9	12	16	14
GNIS files archived in megabytes	150	300	200	200
Map Titles added to the Inventory	1,500	1,400	1,450	1,450
Total Non-Landsat Image Frames Archived	90,000	80,000	85,000	80,000
Total Non-Landsat Digital Tapes Archived	2,000	1,000*	1,000	1,000
Image Frames Processed and Distributed	377,000	325,000	385,000	325,000

*AVHRR data archive totals are included in selected program outputs for the Global Change Data Systems program element for FY 1990.

Decrease for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	7,880	6,811	-1,069
FTE	141	141	--

The decrease reflects a reduced level of support for data base activities such as organizing, validating, characterizing, indexing, cataloging, and processing of USGS cartographic data and non-Landsat remotely sensed data (such as NAPP). This reduced support will extend the process of incorporating these data into existing data bases.

Examples of the products are: 1) aerial photography to provide ground truth for satellite data used in vegetation and land use studies, 2) aerial photography to support primary map revision, and 3) terrain, boundary, and other land data for input to geographic information systems.

Distribution of change by object class:

The object class detail for the proposed $1,069,000 decrease is as follows:

	Amount
Other Services ---------------------------	$ 869,000
Supplies and Materials -------------------	200,000
Total -------------------------------	$1,069,000

Information Dissemination Services

Objectives: To collect, analyze, and disseminate information about the domestic cartographic, geographic, and earth science related data, information, and products of Federal and State agencies and private sector organizations; to disseminate water resources, geologic, cartographic, and general earth science information and data generated by the Geological Survey; to produce and distribute product catalogs, indexes, and materials describing the availability, attributes, and uses of products; and to establish and implement policies for product distribution activities such as product pricing, sales forecasting and analysis, and marketing of Geological Survey products including maps, digital cartographic data, aerial photographs, and mapping by-products.

Base Program: The Information Dissemination Services program element is the focus of an integrated network of information offices and sales outlets, including a centralized distribution facility in Denver, Colorado. Consistent with the objectives of OMB Circular A-16, the Geological Survey gathers, reviews, indexes, and catalogs information about the Nation's cartographic and geographic products, thus minimizing duplication while assisting Federal, State, and private agencies in planning for and acquiring the specialized products needed for their programs. To handle the cartographic and geographic information requests in a timely manner as well as to acquire assistance in handling the large volume of data to be cataloged, the Geological Survey has augmented its Earth Science Information Center (ESIC) network by enlisting the assistance of State governments through a State affiliate program. The Geological Survey provides affiliated State offices with initial informational data files, i.e., catalogs, index microfiche, computer output microfilm and updates to these files as required, and the ESIC State offices provide information services locally using their own facilities and employees. The Geological Survey currently has affiliate agreements in 49 States and continues to expand the network.

The ESIC network responds to multidisciplinary requests for information and sells all Geological Survey products including topographic and thematic maps, as well as earth-science publications and reports. The centralized distribution facility warehouses and disseminates published Geological Survey products. This facility serves as a consigned sales outlet for the Government Printing Office (GPO) to sell Geological Survey book publications, and provides over-the-counter and mail-order operations for books and maps, automated mailings to Federal, State, and local governments as well as GPO depository libraries. The facility also serves as warehouse to Geological Survey sales outlets and over 3,800 authorized map dealers in the private sector.

Continuing management improvements and system upgrades are resulting in significant declines in the map inventory. A computerized map stock management system is being procured and an inventory data base is being developed to improve our ability to track physical supplies and sales histories. This system will be used to design a stock reduction program. Included in the map inventory is a wide range of map scales, principally 1:24,000, 1:100,000, and 1:250,000 scales depicting topographic and thematic cartographic data. For FY 1990 and FY 1991, the estimated sales volume and reimbursements from maps sold to non-Federal users are projected to total approximately 5,100,000 maps and $8,000,000 annually.

The Information Dissemination Services program forecasts and analyzes sales data, produces the indexes, informational literature, and exhibits describing the products and related activities of the National Mapping Program, and plans revenue enhancement activities including public service announcement campaigns and marketing programs to increase consumer awareness and use of the products. Through this program the Geological Survey also directs the Federal Map Depository Library Program and formulates map depository and other policies relating to the distribution of Geological Survey products.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adj.Approp.	FY 1991 Base	FY 1991 Estimate
Information Inquiries Processed	658,000	645,000	700,000	700,000
Maps and Charts (public and private holdings) indexed in Data Bases	245,000	243,000	245,000	245,000
Aerial and Space Images (public and private holdings) indexed in Data Bases	16,400,000	16,500,000	16,600,000	16,600,000

Global Change Data Systems

Objectives: To manage and facilitate access to global land data sets required to support global-change investigations.

Base Program: This program is part of an integrated USGS effort that responds to the need for improved earth science information with respect to the issue of Global Change and is an integral part of the U.S. Global Change Research Program research plan developed by the interagency Committee on Earth Sciences, of the Federal Coordinating Council on Science, Engineering, and Technology, under the Office of Science and Technology Policy. The Geological Survey is drawing on its extensive experience in managing large digital data bases of earth science information and merging, spatially analyzing, and modeling these data in comprehensive geographic information systems (GIS). The program provides for the development of a Land Data and Information Management System that will locate, catalog, and make available land data and information needed by the global change science community. Development of this data system began in FY 1990.

The data system required to develop an understanding of global change and its impacts will be unprecedented in size, scope, and complexity and comprised of input from various disciplines and agencies. Scientists with different technical expertise, in many organizations worldwide, will need to acquire and use these data at distant locations. Considerable planning has gone into designing the management system that will link the desired databases. Many of the Geological Survey's existing data bases of earth observations can contribute to global change investigations. For example, the Geological Survey currently manages an archive of approximately 1 million Landsat scenes of the world. Landsat data constitute the longest consistent record of surface conditions of the earth available to the science community and provide a data base for comparison with new data from the NASA Earth Observing System (EOS) planned for launch in the mid-1990's. In addition, worldwide data from the National Oceanic and Atmospheric Administration's Advanced Very High Resolution Radiometer (AVHRR) are received, processed, archived, and distributed by the Geological Survey to Federal researchers for a wide variety of resource inventory and monitoring purposes. These data provide a baseline data set for global change investigations. Steps are being taken to ensure that these critical data bases are preserved for future generations.

The Geological Survey is now developing the general structure of the Land Data and Information Management System, designing a hierarchy of data directories and catalogs, and defining the necessary standards for data access and data formats. Data and information exchange arrangements and networks with national and international data centers and repositories are being established. Electronic catalogs and indexes are being developed to assist the global change science community in locating, obtaining and using needed land data. In addition, global land data sets identified by the science community are being produced, organized, structured and made available for long-term use.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adj.Approp.	FY 1991 Base	FY 1991 Estimate
Scenes in the National Satellite* Land Remote Sensing Data Archive	--	1,050,000	1,050,000	1,070,000
Historical Landsat Scenes Converted to Durable Media	--	1,000	1,000	50,000
AVHRR Scenes Acquired, Processed, and Archived	--	4,000	4,000	5,000
Global/Continental Data Sets Archived at EROS Data Center (EDC)	--	10	10	15
Land Data Sets at other locations accessible through EDC	--	3	5	20
Land Surface and Geographic Characterization Research Projects in Progress	--	0	0	4

*150,000 Landsat Thematic Mapper scenes transferred from NASA to USGS.

Increase for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	2,992	7,092	+4,100
FTE	5	10	+5

This increase is comprised of three parts, as follows:

1) Land Surface Data Systems Development. This $2 million increase will focus on the design and development phase of the Land Data and Information Management System, which will locate, catalog, and make available land data and information needed by the global change science community. FY 1991 activities will continue to establish information exchange arrangements and electronic networks with selected international and national data centers and repositories. Such capability will allow users to obtain information stored in numerous locations through a single user access system. This increase also will be used to further the production and structure of long-term, consistent, global data sets identified by the scientific community as needed for understanding and measuring changes occurring on a global scale. This increase also accelerates development and implementation of the necessary media conversion systems to ensure preservation and maintenance of over 1 million Landsat scenes acquired since 1972. The process involves 1) the conversion of the existing, slowly degrading, high-density digital and analog tapes to a modern durable medium such as cassette tape, and 2) the upgrading of existing data retrieval and processing systems as necessary to provide for use of the data. By the end of FY 1991, implementation of the Landsat Thematic Mapper (TM) conversion system will occur, conversion of TM data will begin, and development of the Landsat Multi-spectral Scanner data conversion system will be initiated.

2) Land Surface and Geographic Characterization Research. This $2 million increase will initiate research to define, develop, and test land surface characterizations to serve the needs of global process and modeling studies. Environmental models require adequate and unified descriptions of the land, botanic cover, and their behavior and modification. Applying its expertise in the geographic and cartographic sciences, the Geological Survey will commence research projects in collaboration with data collectors, process specialists, and modelers from the USGS and from other agencies to define, characterize, spatially integrate, and map the extent and distribution of land surface processes that: influence the exchange of water (climate and hydrologic systems); determine carbon and nutrient exchange (biogeochemical dynamics); discriminate natural versus human-induced changes (ecological systems and dynamics); describe land-use and conversion (human interactions); and describe coastal erosion and wetlands loss and vulnerability (solid-earth processes).

The effectiveness of pilot land characterizations will be tested and issues of scale dependence, data set architecture, and long-term observation strategy will be examined in a context of process model development.

3) Interagency Working Group on Data Management for Global Change (IWGDMGC). This $100,000 increase supports activities of the IWGDMGC which coordinates global change related data management activities among NASA, NOAA, USGS, other DOI bureaus, National Science Foundation, and Departments of Agriculture, Energy, Navy, and State. This funding will be used for contractual services in

support of prototype data management experiments and for workshops to train and receive feedback from the science community.

Distribution of change by object class:

The object class detail for the proposed $4,100,000 increase is as follows:

	FTE	Amount
Personnel Compensation ------------------------	5	$ 175,000
Personnel Benefits -------------------------		25,000
Communication, Utilities, and Misc. Charges ---------------------------		25,000
Other Services ------------------------------		2,875,000
Supplies and Materials -----------------------		100,000
Equipment ----------------------------------		900,000
Total	5	$4,100,000

Justification of Program and Performance

Activity: National Mapping, Geography, and Surveys
Subactivity: Research & Technology

(Dollar amounts in thousands)

Program Elements		1990 Enacted to Date	1990 Adjusted Approp.	1991 Base	1991 Estimate	Inc.(+) Dec.(-) from Base
Cartographic & Geographic Research	$	8181	8070	8280	8280	0
	FTE-T	124		124	124	0
Nat'l Cartographic Requirements, Coordination, & Standards	$	3873	3821	3922	3922	0
	FTE-T	61		61	61	0
Geographic & Spatial Information Analysis	$	6545	6457	6558	5661	-897
	FTE-T	46		46	45	-1
Total Requirements	$	18599	18348	18760	17863	-897
	FTE-T	231		231	230	-1

Impact of Public Law 99-177

	1990 Enacted to Date	PL 99-177 B.A. Cancellation	1990 Adjusted Approp.
Research & Technology	18599	-251	18348

This reduction in funding will result in the slowing of research projects in progress, including development of digital map revision procedures necessary to the implementation of more efficient map production operations.

Authorization

43 U.S.C. 31 et. seq.	Director of Geological Survey - Establishment of office. This section provides, among others, that the Geological Survey is directed to classify the public lands and examine the geological structure, mineral resources, and products within and outside the national domain.

43 U.S.C. 41	Publications and reports; preparation and sale. This section provides that the publications of the Geological Survey shall consist of geological and economic maps illustrating the resources and classification of lands and other reports.
43 U.S.C. 45	Production and sale of copies of photographs and records. This section authorizes the Geological Survey to provide and sell on a reimbursable basis copies of aerial or other photographs, mosaics, and other official records.
43 U.S.C. 49	Extension of cooperative work to Puerto Rico. This section authorizes the making of topographic surveys in Puerto Rico by the Geological Survey.
43 U.S.C. 1318	Geological Survey: classes and sizes of publications. This section requires that publications of the Geological Survey shall include maps, folios, and atlases required by law. This Section further provides for printing and reprinting of Geological Survey reports and distribution to Congress and the Library of Congress.

Cartographic and Geographic Research

Objectives: To conduct research in the mapping sciences, geography, and related disciplines and develop advanced computer techniques in support of the Geological Survey's mission to conduct the National Mapping Program which provides leadership in surveying, mapping, and remote sensing, and disseminates current and accurate information about the Nation's energy, mineral, and water resources. This includes the basic research that supports the systems acquisition effort funded by the Advanced Cartographic Systems subactivity. In addition, this research provides the foundation for developing national cartographic standards, and supports the analytical activities funded by the Geographic and Spatial Information Analysis program element.

Base Program: The Geological Survey conducts research, investigations, and technology development activities to: directly support all aspects of cartographic production and related mapping and surveying operations; to investigate automated procedures and spatial data handling techniques required for the implementation of advanced digital cartographic production systems; to develop new types of cartographic products; to develop comprehensive digital cartographic data base management systems, and digital data structures suitable for cartographic production and advanced analysis of complex earth science data sets in geographic information systems; and to investigate capabilities of new sensor systems and processing techniques leading to the development of advanced earth remote sensing systems and image map products for multiple earth science applications.

This program element supports research conducted in cartography and geography, and the related fields of geodesy, photogrammetry, remote sensing, lithography, and computer science. This research encompasses digital cartographic production systems and software, spatial data handling techniques for production of graphic and digital cartographic data and for advanced computer analysis of earth science data sets, and digital image processing techniques for processing of remotely sensed image data for development of image map products that serve multiple earth science applications.

Research is conducted with remotely sensed data to determine optimum map scales, resolution, and image combinations for production of image products for cartographic and other earth science applications. Photogrammetric investigations develop techniques to ensure production of geometrically accurate map products that conform to National Map Accuracy Standards. Map projections are developed and tailored for specific user applications.

Research initiatives to support current and future cartographic operations and products include: image processing techniques for production of digital orthophotoquads; algorithms for restoration, spatial filtering, and enhancement of remotely sensed image data; applications of satellite image data for photo inspection and digital revision of graphic map products; and statistical modeling techniques to improve analytical capabilities of geographic information systems.

This program element also supports the Geological Survey's ongoing development of technologies required for the implementation of an advanced digital cartographic production system and provides digital procedures for production and revision of graphic and digital cartographic products. The planning and management of the implementation of these technologies are funded through this program element. The hardware and software components, facilities, and maintenance associated with the advanced digital cartographic production system are funded through the Advanced Cartographic Systems subactivity. This program covers technical development activities in digital data production, data base development, product generation, and production management.

Data production technology is being developed to improve capabilities for digital data collection, editing, processing, and quality control. Ongoing developments include: optimum techniques for mass digitization of map data; editing systems for use with digital line graph data; system modifications and techniques to incorporate land-use and land-cover data and geographic names data into the digital cartographic data base; and digital revision techniques that include cartographic feature extraction from images and subsequent data integration. Data base development involves the design of an optimum configuration for the operational and archival data bases used for digital cartographic production. A new data structure for digital line graph data that will support product generation capabilities is being developed to support production of all standard and derived graphic and digital cartographic products. Included are capabilities for improved plotting of graphic products from digital data, and development of interfaces between the digital cartographic production system and geographic information system to support advanced analysis and generation of derived products.

Technological investigations are also being conducted to develop an interface between the advanced digital cartographic production system and the proposed network of automated map requirements and production authorization system. This interface is required to ensure that production is prioritized appropriately and to establish efficient production tracking within the data base management system.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adj.Approp.	FY 1991 Base	FY 1991 Estimate
Research Projects in Progress --------------------	29	28	28	28

National Cartographic Requirements, Coordination, and Standards

Objectives: To coordinate and respond to Federal and State requirements for graphic, image, and digital map data produced by the National Mapping Program that are multipurpose and meet uniform standards; to develop, implement, and maintain cartographic data standards; and to facilitate the exchange of cartographic and other earth science data and reduce duplication of effort among Federal agencies.

Base Program: The Geological Survey conducts a variety of requirements gathering, coordination, and standards development activities. By Office of Management and Budget mandate (OMB Circular A-16), the Department of the Interior, through the Geological Survey, exercises Governmentwide leadership in ensuring coordinated planning and execution of Federal mapping efforts. This mandate extends to State and local government agencies whose programs and cartographic requirements are wholly or partially supported with Federal funds. The Survey annually canvasses 40 Federal agencies and the 50 States to coordinate surveying and mapping activities and arranges the exchange of information concerning technological developments in Federal cartographic activities. The Survey also gathers requirements through its regional centers, State Mapping Advisory Committees, and other means of coordination.

Through these mechanisms, the participating agencies identify and prioritize their mapping and data requirements. The Geological Survey organizes these requirements into a comprehensive annual national plan, and schedules production in accordance with capacity and funding levels. A critical component of the requirements and coordination process is the follow-on with each respondent to communicate the status of their requests and to continue to keep abreast of their program needs. Additionally, significant coordination responsibilities are associated with bilateral agreements with other Federal agencies such as with the Bureau of the Census, Forest Service, and the Defense Mapping Agency.

In addition to producing and disseminating cartographic and geographic data, the Geological Survey, by a 1980 Memorandum of Understanding with the National Bureau of Standards (now the National Institute of Standards and Technology (NIST)), has the assigned lead to develop, define, and maintain Federal cartographic data standards. Through the National Mapping Program, the Geological Survey establishes digital cartographic data standards and quality control procedures for collecting data in a form that meets accepted standards.

Digital cartographic and other earth science data produced and maintained by Federal agencies are exchanged, integrated, and analyzed for earth resource management applications. Many data bases have incompatible data structures and formats, making data exchange difficult. The Geological Survey chaired a joint working group of the National Committee for Digital Cartographic Data Standards and the Standards Working Group of the Federal Interagency Coordinating Committee on Digital Cartography from which a proposed set of digital cartographic data standards has been developed. The proposed standards include a spatial data transfer component designed to meet the need for transfer of spatial data from one computer system to another. The draft standards are undergoing rigorous testing by Federal agencies and other external organizations prior to submission to the NIST. Responsibility for maintenance of the standard, once it becomes a Federal Information Processing Standard (FIPS), will rest with the Geological Survey. Maintenance of a FIPS involves interaction with the user community to answer technical questions about the standard and its applications. Recommended changes are formally considered by the maintenance authority and, if necessary, that authority would work together with the NIST to prepare a change notice to the published FIPS.

In addition to establishing and maintaining data exchange standards, the Geological Survey develops, implements, and maintains specifications and standards for all USGS cartographic products and production operations under the Technical Instructions Program. The technical standards and instructions program results in written documents and guidelines on such items as: standards for all digital and graphic map products; software documentation and users manuals for the large volume of software developed in-house for photogrammetric and cartographic operations; data user's guides to provide instruction in the use of such National Mapping Program products as digital line graph and digital elevation model data, land-use and land-cover digital data, and the Geographic Names Information System; and procedure manuals on a wide variety of mapping operations including camera calibration, map accuracy testing, use of global positioning system equipment for establishing map control, processing of satellite images for map production, semi-automated digitizing using line-following techniques, production of digital line graphs from scanned map data, and digital elevation model editing procedures.

In response to increased use of digital cartographic data in the Federal Government and the need to promote and implement standards, OMB established in 1983 and rechartered in 1989 the Federal Interagency Coordinating Committee on Digital Cartography to:

- Facilitate the coordination of Federal digital cartographic activities, including the exchange of data, to minimize duplication of effort.
- Advise the Geological Survey regarding which categories of digital cartographic data are needed in the National Digital Cartographic Data Base to meet Federal agency requirements.
- Develop Federal standards of content, format, and accuracy for digital cartographic base data.

Chairmanship of the committee is assigned to the Department of the Interior and delegated to the Geological Survey.

In 1982, the Secretary of the Interior assigned the Geological Survey the responsibility to organize and chair the Interior Digital Cartography Coordinating Committee. This committee addresses a wide range of issues associated with digital cartographic activities within the Department of the

Interior. The committee also coordinates the implementation of geographic information system technology to support the natural resource management mission of the Department to provide more timely and more effective solutions to major earth resource problems.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adj.Approp.	FY 1991 Base	FY 1991 Estimate
Technical Standards, Instructions, and Reports --------	30	24	26	26
Coordination Reports and Newsletters ------------------	5	5	5	5

Geographic and Spatial Information Analysis

Objectives: To develop new capabilities in remote sensing and spatial data analysis of cartographic and other earth science data leading to improved, cost-effective geographic information systems, image processing, and analytical techniques for earth resource monitoring and management; and to provide leadership and coordination for the Department's activities in developing and using remote sensing and geographic information system technology.

Base Program: As the principal Federal civilian agency engaged in digital cartography, remote sensing, and other earth science disciplines, the Geological Survey maintains a knowledge of advanced techniques in data processing that relate to image processing and geographic information system (GIS) technology. A GIS is a computer hardware and software system designed to collect, manage, analyze, and display spatially referenced data. Sufficient advanced software and hardware capabilities must be available to earth scientists so that image processing and GIS technologies can be used effectively to merge digital cartographic data, digital images, and other earth science data for computer analysis to support the complex research missions of the Geological Survey.

Federal, State, and local government agencies are confronted with complex earth science and natural resource management problems. The Geological Survey is increasingly required to serve as an expert resource on topics such as the Nation's energy and mineral potential and hazards risk assessment. Remotely sensed images provide scientists with valuable resources data, and GIS technology allows scientists to process and simultaneously interrelate multiple data sets. Increasing usage of these data by government scientists and managers is increasing the requirement for communications networks to link these data bases. The Geological Survey is responding by expanding the applications of GEONET, a communications and data transfer network that links numerous digital spatial data bases. Geographic and spatial information analysis techniques are revolutionizing conventional scientific research methods and providing more timely and more effective solutions to major earth resource problems.

The Geological Survey is developing improved and cost-effective techniques for using remotely sensed data (satellite and aircraft) and for merging and analyzing these data with digital cartographic, geologic, hydrologic, and other earth science data sets to build comprehensive geographic information systems to inventory, monitor, and manage natural resources. Recent research accomplishments include: 1) developing algorithms and data processing procedures for automated derivation of hydrologically related terrain characteristics from digital elevation models; 2) continuing development and refinement of procedures to enhance and merge satellite image data with other earth science data sets; 3) developing techniques for using topographic, cartographic, and geochemical data sets for modeling the occurrence of toxic elements such as radon and selenium; 4) developing prototype software to exchange data between a number of different GIS's; and 5) assisting other GIS users in linking disparate digital spatial data bases and conducting cooperative GIS projects that apply to local, State, National, and international earth science programs. The Geological Survey also cooperated with several agencies in establishing new installations of the Land Analysis System to provide a broad range of functional capabilities for image and tabular data processing and analysis, geographic data input and manipulation, and custom product generation.

The Geological Survey continues to investigate GIS applications for assessing mineral potential of Federal lands and is actively pursuing and supporting projects that transfer data, knowledge, and capabilities to scientists and mangers both within and outside the Geological Survey so that GIS technology can facilitate ongoing programs. The following are selected examples of interdisciplinary earth science GIS projects that both use and are developing advanced GIS technology:

Global Science Transect

Test of GIS technology applied to a new generation of international geologic transects that will permit the creation of a three-dimensional representation of the earth's crust.

Urban Planning

Cooperative effort with the National Capital Planning Commission, the Bureau of the Census, and others to develop a 3-D model of the corridor of monuments, memorials, and major Federal buildings in the S.W. Washington, D.C., area for use in urban planning, review, and evaluation.

Hazards Reduction

Application of GIS techniques to Regional Earthquake Hazards Assessment, an element of the National Earthquake Hazards Reduction Program, examining large urban areas at risk from earthquakes.

Western U.S. Greenness Mapping

Cooperative program with U.S. Forest Service, Bureau of Land Management, National Park Service, and National Weather Service to depict relative levels of green vegetation on a biweekly basis across the Western United States using images from the Advanced Very High Resolution Radiometer (AVHRR) sensor on board the NOAA-11 satellite.

Belt Basin Project

A cooperative project with the Geologic Division of the Geological Survey to develop advanced GIS techniques for investigating the mineral land energy potential of a complex geologic terrain in western Montana using a comprehensive digital data base consisting of geologic, geophysical, topographic, and field data.

Map of the Future

Preliminary design study for a proposed Compact Disk-Read Only Memory (CD-ROM) map product. The intent of the research is to enable the user to design special purpose thematic maps utilizing a combination of digital data products and non-proprietary software on a typical low-end PC system.

The Geological Survey has consolidated selected GIS hardware and software into interdisciplinary, regional, research and development facilities. These facilities provide: (1) cost-effective centers where the Geological Survey can conduct pilot GIS projects in cooperation with other Federal agencies; (2) central locations where Geological Survey scientists can efficiently display, analyze, and interpret data about land, water, and mineral resources to meet programmatic responsibilities; and (3) a highly effective technology transfer environment for sharing information on GIS hardware and software, data base design, pilot projects, and spatial data analysis techniques with other Bureaus within the Department of the Interior, and with other Federal, State, and local agencies.

The Geological Survey participates in cooperative remote sensing and GIS demonstration projects and training activities supported primarily by reimbursable funding from other Bureaus of the Department of the Interior and other Federal and State agencies. The purpose of the cooperative projects and training courses is to transfer remote sensing and spatial data analysis techniques to environmental scientists of other organizations. In addition, the Geological Survey provides satellite image maps and other custom map products and services to other organizations on a cost reimbursable basis. Cooperators include the Department of Defense, Agency for International Development, Department of Agriculture, NOAA, and other Interior bureaus.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adj.Approp.	FY 1991 Base	FY 1991 Estimate
Published Technical Papers and Reports ---------------	15	14	17	14
Cooperative Research and Development Projects -------------	30	22	30	12
Cooperative Demonstration Projects ------------------------	14	10	12	8
Training Courses and Workshops ------------------------	17	15	20	15

Decrease for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	6,558	5,661	-897
FTE	46	45	-1

The decrease reflects a cutback of 18 cooperative research and development projects and 4 cooperative demonstration projects. These activities are conducted to transfer the technologies of geographic information systems and remote sensing to Federal earth science and natural resource management programs.

Distribution of change by object class:

The object class detail for the proposed $897,000 decrease is as follows:

	FTE	Amount
Personnel Compensation ----------------------	1	$ 35,000
Personnel Benefits -------------------------		5,000
Travel and Transportation of Persons --------		5,000
Other Services -----------------------------		542,000
Supplies and Materials ----------------------		10,000
Equipment ----------------------------------		300,000
Total ----------------------------------	1	$897,000

Justification of Program and Performance

Activity: National Mapping, Geography, and Surveys
Subactivity: Advanced Cartographic Systems

(Dollar amounts in thousands)

Program Elements		1990 Enacted to Date	1990 Adjusted Approp.	1991 Base	1991 Estimate	Inc.(+) Dec.(-) from Base
Advanced Cartographic Systems	$	33020	32574	32896	47396	14500
	FTE-T	30		30	60	30
Total Requirements	$	33020	32574	32896	47396	14500
	FTE-T	30		30	60	30

Impact of Public Law 99-177

	1990 Enacted to Date	PL 99-177 B.A. Cancellation	1990 Adjusted Approp.
Advanced Cartographic Systems	33020	-446	32574

This reduction will result in a decrease in the level of system engineering and integration support from Mark II contractors.

Authorization

43 U.S.C. 31 et. seq.	Director of the Geological Survey - Establishment of office. This section provides, among others, that the Geological Survey is directed to classify the public lands and examine the geological structure, mineral resources, and products within and outside of the national domain.
43 U.S.C. 38	Topographic surveys; marking elevations. This section provides for the establishment and location of permanent benchmarks used in the making of topographic surveys.

Advanced Cartographic Systems

Objectives: To apply state-of-the-art technology in developing the next generation system capability and implement these new systems in Geological Survey mapping programs. This modern capability will enhance and expand the capacity to produce cartographic data in graphic and digital form through the acquisition and development of technologically advanced, computer assisted cartographic systems. It builds upon a base of knowledge developed within the Cartographic and Geographic Research program element and directly supports the National Map and Digital Data Production subactivity. Specific objectives are to develop and implement:

- A capability for mass conversion of graphic cartographic data to digital cartographic data.
- The capability to exploit remotely sensed data as a direct source for digital cartographic products to be included in a National Digital Cartographic Data Base (NDCDB).
- Data management procedures, equipment and storage media adequate for operation of the NDCDB and associated supporting data bases and files.
- The capability to use the NDCDB materials to produce all National Mapping Program products.

Base Program: The Geological Survey continues with the program of replacing outdated analog, graphic mapping equipment with more efficient hardware and software systems capable of producing digital and graphic cartographic data. The digitizing equipment will be used to collect elevation, boundary, Public Land Survey System, transportation, hydrography, and other cartographic data in digital form to meet Federal and State agencies' requirements.

The Geological Survey will install more digitizing and interactive digital data editing systems and upgrade existing digitizing and editing systems in support of its efforts to expand digital cartographic data production. These systems are used to collect and edit digital cartographic data prior to entering the data in the NDCDB.

The Advanced Cartographic System (ACS) program's equipment acquisition will take advantage of current Department of Defense/Defense Mapping Agency (DMA) developments in the fields of digital cartography and photogrammetry. The devices and associated software emerging from the DOD programs will significantly advance the state-of-the-art technology in digital cartography. These advancements, when merged with new developments in the civilian sector, such as mass data storage units, more powerful computers, improved data management systems, interactive computer graphic devices, and data processing systems, will have a greater impact on the science of cartography than any advancement in the last 50 years.

This program element supports the development of a new digital cartographic data production system that integrates state-of-the-art technology. The advanced system is being developed to meet the increasing level of requirements for current digital cartographic data and map products. When in place, the system will significantly increase the capability to produce and update digital cartographic data at less cost, as substantiated in an OMB requested cost-effectiveness study conducted in 1986 and updated in 1989. Through this system, the Geological Survey will continue to fulfill its lead civilian agency responsibility to provide the user community with the current cartographic and geographic information required to support their programs, and to provide them access to the advanced technology.

New capabilities for collection and management of digital cartographic data have made the development of an integrated digital cartographic production system economically feasible. The new system can be conceptually divided into four major functions as follows:

(1) Graphic conversion includes the devices and software to convert graphic information (map separates) into digital data for inclusion in the NDCDB. This system development will result in a mass processing capability using such technologies as raster scanning, computer-assisted line following, and automated character recognition which will substantially increase digital data production and map revision capabilities.

(2) Sensor exploitation consists of the devices and software to collect digital data directly from photographic images and remote sensor outputs. Digital interactive graphic work stations will accept digital output from high-speed image scanners and from digital sensors. This capability is necessary because the existing map production system cannot adequately respond to the product requirements for computer-assisted applications and is unable to use the spectrum of source materials now available from advancing remote sensing and satellite technologies.

(3) Data base operations include the computers and the mass storage capabilities required to manage the NDCDB and other massive files, such as source material and product data bases. These operations require high-speed computational capabilities such as array and parallel processors.

(4) Product finishing includes the devices and software to convert digital cartographic data from the NDCDB into specific products, such as line maps, image maps, thematic maps, special graphics, and digital products. This function will require computers, interactive graphic workstations, and a variety of output devices, such as laser plotters. Product finishing will require substantial software developments.

System development is proceeding simultaneously in all four functions and will result in a more efficient system capability. The production of digital cartographic data and maps using this advanced system is funded under the National Map and Digital Data Production subactivity.

In 1985, the Geological Survey reviewed its primary mapping and revision program in order to examine the long-range transition of mapping technology from predominantly graphic to digital production. The review anticipated completing primary map coverage of the conterminous United States and emphasized the importance of maintaining standards of currentness, content, and geometric accuracy through the map revision process. It also concluded that this effort should take advantage of benefits associated with digital cartography.

In 1986, the Geological Survey, in consultation with OMB, initiated a series of economic analyses to develop a strategy for the efficient revision of primary maps. An analysis completed in October 1986 and updated in September 1989 shows that Advanced Cartographic Systems technology is the most cost-effective method of map production. The capacity to support an average 10-year map revision cycle for the primary map scales in the U.S. has been used to size advanced cartographic systems development. In November 1988, a Primary Mapping Economic Analysis (PMEA) study was completed that estimated the economic benefits of revising primary maps and digital data at various time intervals. The study indicated that benefits support map revision cycles equal to or even more frequently than the 10-year revision cycle used to size ACS development.

Development of the state-of-the-art system for generation and revision of cartographic products which began in FY 1986 necessitates a phased and scheduled long-term investment. The FY 1988 program implemented hardware and software systems required for digital data editing which expanded the capabilities for mass digitization of maps. The FY 1989 program continued to procure and implement improved data collection and editing workstations, implement new archival and operational data base systems, procure additional graphic product generation hardware, and implement new production software to accelerate the growth of the NDCDB.

The FY 1990 program continued to support the multi-year investment profile for development and acquisition of the Division's advanced cartographic production systems. Specifically, program funding supported development of new production and inventory system software, expanded development of new and modified software within the DMA program, supported modification of existing and construction of new facilities to support installation of new production hardware and procure hardware for digital revision, graphics data conversion, data edit and integration, data verification and finishing, and image exploitation.

Increase for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	32,896	47,396	+14,500
FTE	30	60	+30

The ACS program is strategically phased with DMA developments so that existing DMA contracts with specific windows of opportunity can be utilized. In fact, USGS system components (both hardware and software) are part of a much larger DMA procurement which offers the significant cost advantages cited in the cost effectiveness analysis. This funding increase will permit USGS to remain in phase with the DMA procurement program and thus take advantage of the greatly reduced costs to the Geological Survey that can be achieved by the joint procurement of equipment and software. DMA software developed at DMA expense will, by agreement with DMA, be made available to USGS at no cost, saving the Geological Survey in excess of $500 million in software development costs. Additional developmental efforts are being conducted by the Geological Survey to augment DMA software to meet product and process requirements of the National Mapping Program in the 1990's. The hardware and software being developed will be combined with existing equipment to be procured from conventional sources. The combination of DMA-developed technology and conventional technology is advantageous in that it allows efficient use of personnel, is conducive to orderly implementation of new technology, and provides greater flexibility in using both conventional and classified source materials for mapping, thus ensuring that the National Mapping Program can be responsive to National requirements for maps and map products. The FY 1991 ACS program will continue to support development of new production system software, modification of software from the DMA program, and procurement of new hardware for operational and archival data bases, analytical control generation, graphics scanning and data conversion, digital data edit and revision, map graphic design workstations, and data finishing and verification devices. These procurements are crucial and integral steps in the multiyear systems development that must be accomplished in FY 1991 to maintain the planned program schedule and cost.

Distribution of change by object class:

The object class detail for the proposed $14,500,000 increase is as follows:

	FTE	Amount
Personnel Compensation --------------------	30	$ 1,200,000
Personnel Benefits ------------------------		180,000
Other Services ----------------------------		2,700,000
Equipment ---------------------------------		10,420,000
Total ------------------------------------	30	$14,500,000

U.S. GEOLOGICAL SURVEY
Analysis by Subactivity

Activity: Geologic and Mineral Resource Surveys and Mapping

(Dollars amounts in thousands)

Subactivity	1989 Actual	1990 Approp. Enacted	1990 Adjusted Approp.	1991 Base	1991 Estimate	Inc. (+) Dec. (-) from Base
Geologic Hazards Surveys	48390	48609	47950	48766	48766	0
Geologic Framework and Processes	28385	33330	32881	33356	36956	3600
Offshore Geologic Surveys	26583	26814	26450	26936	26936	0
Mineral Resource Surveys	47518	47477	46836	47873	46373	-1500
Energy Geologic Surveys	27323	27475	27104	27716	25790	-1926
TOTAL	178199	183705	181221	184647	184821	174

Geologic and Mineral Resource Surveys and Mapping
Subactivity/Element Change Crosswalk - FY 1990 Estimate
(Dollars in thousands)

Format of FY 1990 Congressional Budget	Amount 1990 Adj. Approp.	Format of FY 1991 Congressional Budget	Amount 1990 Adj. Approp.
Geologic Hazards Surveys-No Change	47950	Geologic Hazards Surveys-No Change	47950
Geologic Framework & Processes	32881	Geologic Framework & Processes	32881
National Geologic Mapping	19132	National Geologic Mapping	19132
Deep Continental Studies	3020	Deep Continental Studies	3020
Geomagnetism	1710	Geomagnetism	1710
Climate Change	3001	Climate Change	3001
Coastal Erosion	6018 a/	Coastal & Wetlands Processes	6018 a/
Offshore Geologic Surveys-No Change	26450	Offshore Geologic Surveys-No Change	26450
Mineral Resource Surveys-No Change	46836	Mineral Resource Surveys-No Change	46836
Energy Geologic Surveys	27104	Energy Geologic Surveys	27104
Evolution of Sedimentary Basins	5200	Evolution of Sedimentary Basins	5200
Coal Investigations	7288	Coal Investigations	7288
Oil & Gas Investigations	5577	Oil & Gas Investigations	5577
Oil Shale Investigations	577	Oil Shale Investigations	577
Uranium/Thorium Investigations	2087 b/	Uranium & Radon Investigations	2087 b/
Geothermal Investigations	5869	Geothermal Investigations	5869
World Energy Resource Assessment	506	World Energy Resource Assessment	506
TOTAL	181221	TOTAL	181221

Geologic and Mineral Resource Surveys and Mapping
Subactivity/Element Change Crosswalk - FY 1991 Estimate
(Dollars in thousands)

Format of FY 1990 Congressional Budget	Amount 1991 Estimate	Format of FY 1991 Congressional Budget	Amount 1991 Estimate
Geologic Hazards Surveys-No Change.......	48766	Geologic Hazards Surveys-No Change.......	48766
Geologic Framework & Processes...........	36956	Geologic Framework & Processes...........	36956
National Geologic Mapping	19472	National Geologic Mapping	19472
Deep Continental Studies	3047	Deep Continental Studies	3047
Geomagnetism	1752	Geomagnetism	1752
Climate Change	9749	Climate Change	9749
Coastal Erosion	2936 a/	Coastal & Wetlands Processes	2936 a/
Offshore Geologic Surveys-No Change......	26936	Offshore Geologic Surveys-No Change......	26936
Mineral Resource Surveys-No Change.......	46373	Mineral Resource Surveys-No Change.......	46373
Energy Geologic Surveys..................	25790	Energy Geologic Surveys..................	25790
Evolution of Sedimentary Basins	6587	Evolution of Sedimentary Basins	6587
Coal Investigations	6381	Coal Investigations	6381
Oil & Gas Investigations	4905	Oil & Gas Investigations	4905
Oil Shale Investigations	589	Oil Shale Investigations	589
Uranium/Thorium Investigations	1872 b/	Uranium & Radon Investigations	1872 b/
Geothermal Investigations	4939	Geothermal Investigations	4939
World Energy Resource Assessment	517	World Energy Resource Assessment	517
TOTAL...........................	184821	TOTAL...........................	184821

a/ The Coastal Erosion program has been renamed Coastal and Wetlands Processes.
b/ The Uranium/Thorium Investigations program has been renamed Uranium & Radon Investigations.

Activity Summary

Activity: Geologic and Mineral Resource Surveys and Mapping

Geologic processes and events that led to the composition and structure of the Earth affect every facet of our lives in one way or another by controlling the distribution and amount of energy, mineral, and land resources needed to support modern societies. In addition, some of these same processes, operating at present or in the recent past, are responsible for the geologic hazards with which we are increasingly forced to cope. Improving our understanding of the Earth, its composition, its structure, and the geologic processes that affect it, can lead to wiser, more intelligent use of our nation's natural resources, and avoid or mitigate the impact of natural hazards connected with earth processes.

The basic mission of the Geologic and Mineral Resource Surveys and Mapping activity is to provide geologic, geochemical, and geophysical information for other government agencies and the general public on land resources, on mineral and energy resources, and on geologic hazards of the Nation and its territories.

Extensive basic research is done continually on geologic processes and structure. Basic research is a major part of the programs and provides the capability needed to respond to emerging national problems. The programs are presented to Congress under five subactivities:

- Geologic Hazards Surveys are conducted to predict and delineate hazards from earthquakes, volcanoes, landslides, and other geologic phenomena.

- Geologic Framework and Processes research is conducted to: 1) acquire basic information on the Nation's geologic framework, including the deep continental crust, and the processes that have shaped it, 2) develop an understanding of climate change and its effects on land and water resources, 3) measure changes in the strength and direction of the Earth's magnetic field, and 4) acquire and provide geological information on the nature, extent, and causes of coastal erosion and wetlands loss in order to support the President's commitment to "no net wetlands loss." Considerable emphasis is placed on the National Geologic Mapping Program composed of a Federal program and a special Federal/State Cooperative Program which addresses projects of mutual interest to both Federal and State governments.

- Offshore Geologic Surveys conduct, on a regional basis, scientific investigations aimed at the systematic understanding and description of the geologic settings and conditions of the offshore areas of the United States and its territories by developing or extending our understanding of where mineral or petroleum resources occur and in what geologic framework such resources may exist. The program also assesses geologic conditions that may affect their future use and how their formation in oceanic areas can help in the search for analogous onshore deposits of economic significance. The program is generating basic geologic and resource information in the newly declared Exclusive Economic Zone (EEZ) and, through systematic mapping activities, is identifying geologic features that were previously unknown.

- Mineral Resource Surveys provide an assessment of the distribution, quantity, and quality of the mineral resources of the United States by studying the geology of known mineral occurrences and potentially mineralized areas, and by inventing and improving exploration techniques and mineral occurrence models necessary for the development of comprehensive information on domestic and world resources of nonfuel minerals that are essential to a strong national economy and defense. Particular emphasis is placed on strategic and critical minerals and the assessment of the mineral potential of public lands as a major consideration in land management and wilderness determinations.

- Energy Geologic Surveys provide timely and credible assessments of the distribution, quantity, and quality of the Nation's coal, oil and gas, oil shale, uranium, and geothermal resources for the development of national energy policy (particularly with respect to public lands), and to enhance industry's capabilities (especially among independent oil producers) to explore for, and ultimately develop, new sources of energy, principally oil and gas.

In addition to maintaining the programs described above, funds appropriated to this activity provide for scientific and technical program management and support, including development and maintenance of ADP capability, a library system, and scientific laboratories.

Funds appropriated to this activity also contribute to the general administrative expenses of the U.S. Geological Survey based on program service costs ($4,088,000). Global Change program coordination activities and Committee on Earth Sciences responsibilities within the Executive Direction subactivity are also supported within this activity ($123,000).

Justification of Program and Performance

Activity: Geologic and Mineral Resource Surveys and Mapping
Subactivity: Geologic Hazards Surveys

(Dollar amounts in thousands)

Program Elements		1990 Enacted to Date	1990 Adjusted Approp.	1991 Base	1991 Estimate	Inc.(+) Dec.(-) from Base
Earthquake Hazards Reduction	$	34916	34443	35027	35027	0
	FTE-T	474		464	464	0
Volcano Hazards	$	11506	11350	11535	11535	0
	FTE-T	135		135	135	0
Landslide Hazards	$	2187	2157	2204	2204	0
	FTE-T	34		34	34	0
Total Requirements	$	48609	47950	48766	48766	0
	FTE-T	643		633	633	0

Impact of Public Law 99-177

	1990 Enacted to Date	PL 99-177 B.A. Cancellation	1990 Adjusted Approp.
Geologic Hazards Surveys	48609	-659	47950

The impact of this reduction on this subactivity will decrease the operating funds for all projects and result in curtailed fieldwork, equipment purchases, and data analyses.

Authorizations

43 U.S.C. 31(a)	The Organic Act of 1879 authorizes the Geological Survey to conduct "an examination of the geological structure, mineral resources, and products of the public domain.
42 U.S.C. 7701 et seq.	The Earthquake Hazards Reduction Act of 1977 sets as a national goal the reduction in the risks of life and property from future earthquakes in the United States through the establishment and maintenance of a balanced earthquake program encompassing prediction and hazard assessment research, seismic monitoring and information dissemination.

42 U.S.C 5201 et seq.	The Disaster Relief Act of 1974, Section 202(a), states that "The President shall insure that all appropriate Federal agencies are prepared to issue warnings of disasters to State and local officials." In addition, Section 202(b) states that "The President shall direct appropriate Federal agencies to provide technical assistance to State and local governments to insure that timely and effective disaster warning is provided." The Director of the Geological Survey, through the Secretary of the Interior, has been delegated the responsibility to issue disaster warnings "...for an earthquake, volcanic eruption, landslide, or other geologic catastrophe."
42 U.S.C. 4321 et seq.	The National Environmental Policy Act of 1969 requires the Geological Survey to comply with Section 102(2)(C) which pertains to review of Environmental Impact Statements (EIS's) prepared by other agencies. The Geological Survey reviews EIS's for nuclear power plant sites and other critical facilities.
43 U.S.C. 506 et seq.	The Reclamation Safety of Dams Act of 1978 requires the Geological Survey to participate in direct interchange of science information with other agencies. Geologic data developed under the Geologic Hazards Surveys are applicable to dam safety analyses.

Geologic Hazards Surveys are aimed at developing the understanding required to reduce losses from earthquakes, volcanoes, and ground failures. Losses from each of the geologic hazards can be reduced by an appropriate mixture of preparedness, warning, land use, engineering, and construction. These loss reduction strategies require information about the location and character of the hazards and an understanding of the processes involved. The objective of the Geologic Hazards Surveys is to provide this information.

Earthquake Hazards Reduction

Objectives: To mitigate earthquake losses that can occur in many parts of the Nation by providing earth science data and evaluations required for informed land use planning, engineering design, and emergency preparedness decisions. Specific objectives are: (a) to evaluate the earthquake potential of seismically active areas of the United States; (b) to predict damaging earthquakes; (c) to perform concentrated assessments of earthquake hazards and risk in selected urban regions exposed to the earthquake threat; (d) to provide data and information on earthquake occurrences to the public and scientific community; and (e) to provide data on and estimates of the level and character of strong earthquake motion for architects, planners, and engineers.

Base Program: The USGS Earthquake Hazards Reduction Program conducts fundamental research in earthquake hazards assessment and earthquake prediction. The program is a principal part of the National Earthquake Hazards Reduction Program (created by the Earthquake Hazards Reduction Act of 1977), and includes the major efforts of the Federal Government in earthquake-related geophysical and geological studies, as well as important efforts in engineering. The base program is divided into the following five subelements: regional monitoring and earthquake potential studies, earthquake prediction research, earthquake hazards assessments, data and information services, and engineering seismology.

The USGS Earthquake Hazards Reduction Program is augmented and strengthened through support of complementary scientific investigations in universities, State agencies, and the private sector. The USGS program is coordinated with related programs in the Federal Emergency Management Agency, the National Science Foundation, and the National Institute of Standards and Technology through the National Earthquake Hazards Reduction Program. The five elements of the program are described below.

a. Regional Monitoring and Earthquake Potential Studies. The objectives of this subelement are to: (a) delineate seismically active areas and the extent of seismic zones through monitoring with regional seismograph networks; (b) determine the geometry and structure of seismic zones through geologic mapping and geophysical analyses; and (c) estimate fault slip rates, maximum earthquakes, and earthquake recurrence intervals for active faults and seismic zones.

Substantial progress has been made in estimating the long term earthquake potential of various seismic zones in the United States, particularly in the West, and in defining geologic structures, heretofore unrecognized, that give rise to the seismic activity.

Activities in FY 1990 and FY 1991 include:

o Assessment of earthquake potential in the Pacific Northwest based on geologic evidence of major deep subduction zone earthquakes. This work will include: investigations of the extent, ages, and magnitude of uplift or subsidence of coastal sediments as evidence of previous major tectonic events; seismologic studies of the subduction zone; and, geodetic monitoring of crustal strain.

o Investigations of high priority faults in California, particularly along other segments of the San Andreas, Hayward, Calaveras, San Jacinto, and Imperial faults. Detailed subsurface investigations including trenching and drilling will be used to identify prehistoric earthquakes and to refine the seismic history of these faults, to refine or establish the slip rate along the faults, to better represent the recurrence interval, and to estimate the magnitude of future earthquakes.

o Continuation of seismic and geodetic monitoring in southern California where there is a relatively high probability of a major earthquake within the next 30 years.

o Maintain seismic monitoring of regions believed to have high earthquake potential in Alaska, Utah, Nevada, Washington, Oregon, and limited regions of the Central and Northeastern U.S.

o Research to develop and refine techniques for estimating fault characteristics and earthquake potential estimates.

b. Earthquake Prediction Research includes field, laboratory, and theoretical investigations of earthquake mechanics and of the physical characteristics of fault zones, with the goal of establishing the procedures and knowledge needed for the reliable prediction of the time, place, and magnitude of damaging earthquakes. These investigations have been focused on the central and southern California regions, in particular in the Parkfield region of central California where a full scale earthquake prediction experiment has been undertaken.

Reliable prediction depends on developing the methodology to measure a variety of precursory phenomena, and then attempting to establish a causal relationship between precursors and the basic physics of the earthquake source. Thus, a prediction research program must be broadly based and its success will depend heavily on relating precursory observations and subsequent earthquakes using a variety of strategically placed and network integrated instruments.

The specific objectives of this subelement are to: (a) develop earthquake prediction methods and techniques to provide a rational basis for estimates of increased earthquake potential and reliable short term predictions; (b) evaluate in probabilistic terms, the relevance of various geophysical, geochemical, and hydrologic data to accurate earthquake prediction; (c) develop theoretical and laboratory models of the earthquake process to guide observational experiments and to test empirical, predictive techniques; and (d) determine the physical mechanism for induced seismicity, caused either by reservoir loading, fluid injection or fluid withdrawal, and develop techniques for predicting and mitigating this phenomenon.

Program activities in FY 1990 and FY 1991 include:

- Continued monitoring and real time analysis of data from the instrumental networks (seismic, geodetic survey, continuous strain, and creep) at Parkfield, California, to detect precursory phenomena associated with a predicted earthquake in this region. The USGS has forecast that there is a high probability for a magnitude 6 earthquake in the Parkfield area in the next few years. To derive the maximum scientific and engineering information from the predicted earthquake, an experiment has been established to observe the final stages of the process leading up to, during, and following the earthquake. The Parkfield forecast and earthquake warning process have been reviewed and endorsed by the National Earthquake Prediction Evaluation Council and the California Earthquake Prediction Evaluation Council (see Figure G-1).

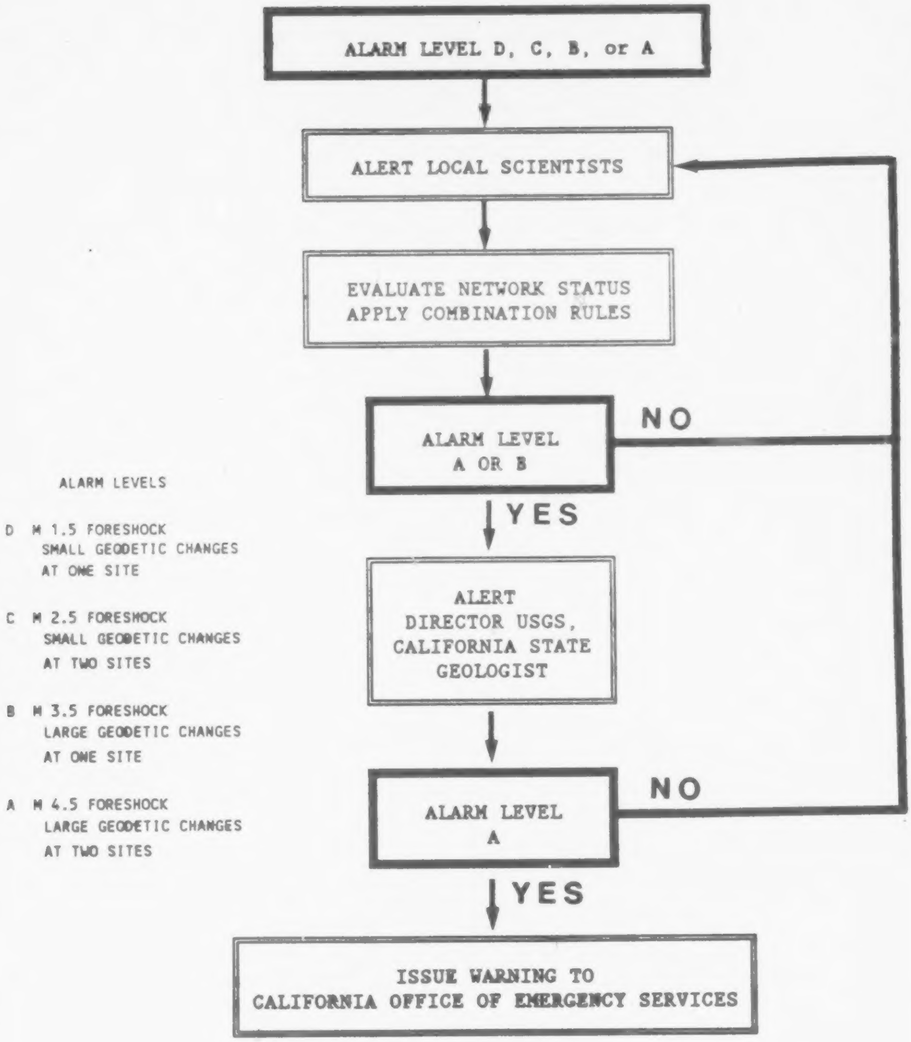
- Operation and maintenance of seismic networks in both northern and southern California, and data analysis at data centers in southern California (California Institute of Technology) and northern California (U.S. Geological Survey, Menlo Park).

- Continued experimentation with geodetic surveys using the satellite-based Global Positioning System (GPS). As results warrant and funding permits, this technique will gradually replace existing land-based, personnel intensive, laser distance measuring surveys to monitor buildup of crustal strain.

FIGURE G-1.-- **PARKFIELD, CALIFORNIA**

EARTHQUAKE PREDICTION DECISION PROCESS

(Simplified)


ALARM LEVEL D, C, B, or A
ALERT LOCAL SCIENTISTS
EVALUATE NETWORK STATUS
APPLY COMBINATION RULES
ALARM LEVEL A OR B
NO
YES
ALERT DIRECTOR USGS, CALIFORNIA STATE GEOLOGIST
ALARM LEVEL A
NO
YES
ISSUE WARNING TO CALIFORNIA OFFICE OF EMERGENCY SERVICES
ALARM LEVELS
D M 1.5 FORESHOCK SMALL GEODETIC CHANGES AT ONE SITE
C M 2.5 FORESHOCK SMALL GEODETIC CHANGES AT TWO SITES
B M 3.5 FORESHOCK LARGE GEODETIC CHANGES AT ONE SITE
A M 4.5 FORESHOCK LARGE GEODETIC CHANGES AT TWO SITES

- Laboratory experiments on rocks at elevated confining pressure, temperature, and pore pressure to study the deformation and failure of rocks and their relationships to earthquakes.

- Theoretical analyses and computer simulation to provide physically based models to guide prediction research.

- Estimates of the state of stress in the Earth's crust (from borehole measurement, earthquake focal mechanisms and geologic indications) in relation to earthquake occurrence. These studies provide a conceptual framework to interpret field observations for earthquake potential and prediction studies.

- Cooperative exchanges on earthquake prediction with Japan, the People's Republic of China, and the Soviet Union to increase the quantity of data and experience available for analysis.

- Continued review by the National Earthquake Prediction Evaluation Council of areas of high seismic potential and of specific predictions.

c. Earthquake Hazards Assessments. Concentrated earthquake hazards assessments focus a critical mass of investigations in a particular region of high earthquake potential. The aim of this concentration is to achieve, over a period of several years, a significant increment in the description and understanding of the earthquake hazards in the chosen region and to develop a foundation for more detailed studies and the development of policies and actions to reduce losses by State and local governments and the private sector. Figure G-2 shows the major earthquake source regions of the United States.

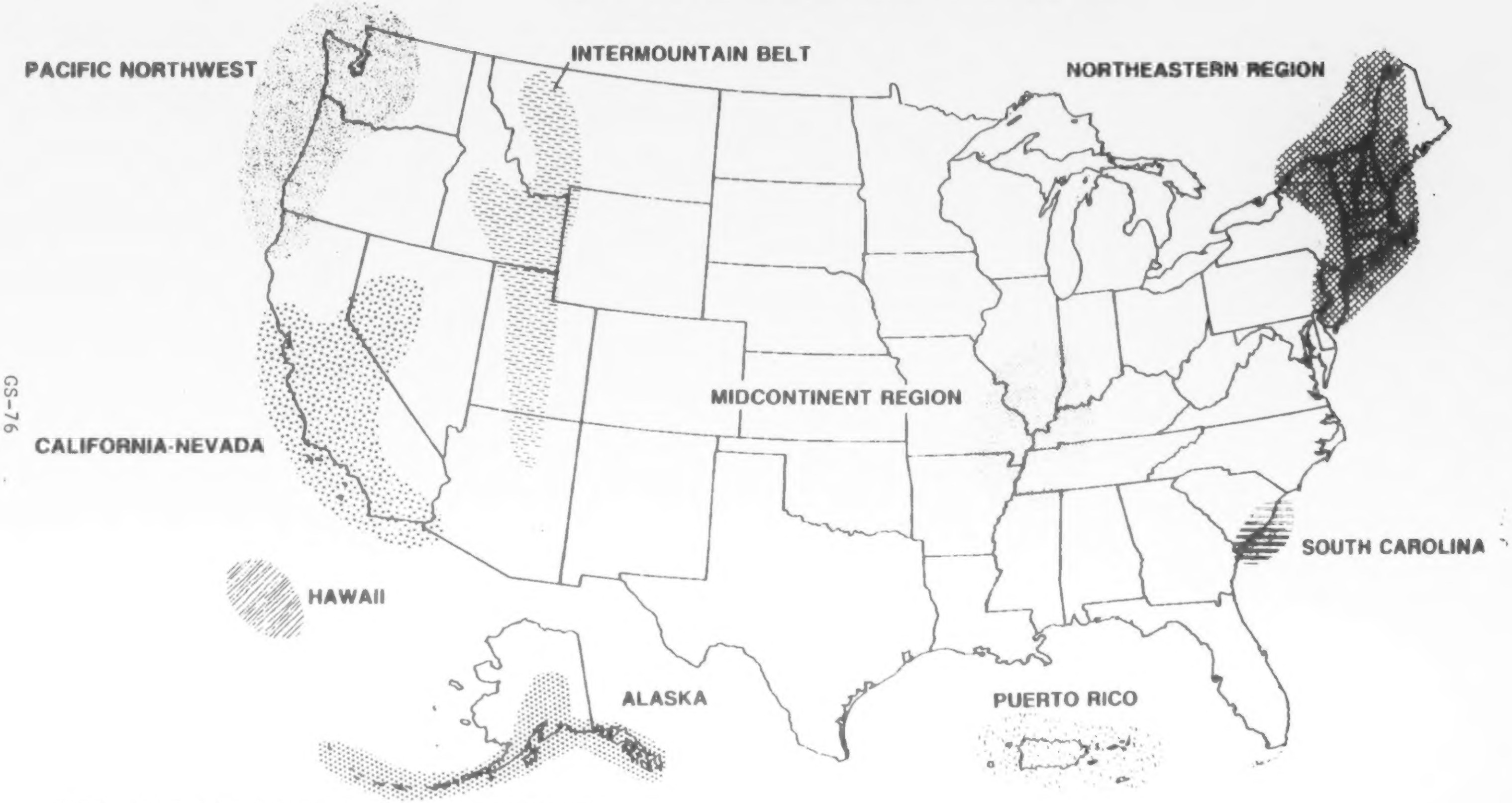
The specific objectives of this program subelement are to: (1) prepare, based on current research results, synthesis reports and maps that assess earthquake hazards in urban regions at risk from damaging earthquakes; (2) test and apply techniques for estimating strong ground shaking, surface faulting, ground failure, and other earthquake related hazards in urban regions; (3) conduct research and specific studies to estimate potential losses associated with earthquakes; and (4) foster implementation of the results in terms of loss reduction measures.

In FY 1989, the focus of studies shifted from the Provo/Salt Lake City/Ogden region of Utah to the Seattle, Portland, and adjacent areas of Washington and Oregon. Early results of work in the Pacific Northwest suggest that the earthquake hazard in that region may be more severe than previously thought. Thus, plans for work there have been extended to make a more definitive assessment. This work is carried out in cooperation with State and local agencies and universities.

Program activities in FY 1990 and FY 1991 include:

- Concentration of research studies in the Pacific Northwest. Focus will be building on and refining broad scale earthquake potential assessments for application in loss reduction activities. Sophisticated geophysical techniques will be used to delineate the extent and geometry of potential seismogenic faults that may be targeted from reconnaissance geologic and geophysical investigations. Ground motion studies, particularly focused

FIGURE G-2.-- **MAJOR EARTHQUAKE SOURCE REGIONS OF THE UNITED STATES**


PACIFIC NORTHWEST
INTERMOUNTAIN BELT
NORTHEASTERN REGION
MIDCONTINENT REGION
CALIFORNIA-NEVADA
SOUTH CAROLINA
HAWAII
ALASKA
PUERTO RICO

NOTE: DIFFERENT PATTERNS HAVE NO SIGNIFICANCE on urban areas, and studies of earthquake-induced landslides in Washington and Oregon will be undertaken.

- Continuation of efforts in the Pacific Northwest with State and local planning officials to facilitate the use of research results in hazard reduction practices and policies.

- Continued preparation of a new generation of national probabilistic ground acceleration, velocity, and spectral response maps with (1) separate ground shaking maps for rock and alluvial surface material; (2) separate maps using time dependent models of earthquake occurrence (where appropriate); and (3) new regional seismic wave attenuation relationships.

- Earthquake aftershock studies, particularly in response to eastern or central U.S. earthquakes, to delineate active fault zones and fault zone geometry, collect attenuation data, study earthquake source properties and analyze site response data. Conduct detailed instrumentation of selected damaged buildings in aftershock zones to obtain building performance data to relate to ground shaking levels.

- Continuation of project to develop and refine earthquake loss estimation techniques. Methods will be modified and refined as appropriate for application in the Puget Sound Region.

d. Data and Information Services. A key link in the development of a successful seismic hazards mitigation and disaster response program is the collection and transmittal of earthquake data for analysis and evaluation. The National Earthquake Information Center (NEIC) coordinates the rapid location and evaluation of earthquakes in the United States and large earthquakes that occur throughout the world. Within NEIC, the National Earthquake Information Service (NEIS) distributes, in a timely manner, earthquake information and data to the public and the scientific research community. NEIS also provides data support for the Tsunami Warning System of the National Oceanic and Atmospheric Administration and acquires fundamental data critical for seismic risk appraisal. Products of the NEIC include weekly, monthly, quarterly, and annual reports on earthquake activity, maps of earthquake distribution, and information services to the public. A 24-hour alert service is provided and appropriate authorities are notified of any potentially damaging earthquakes within the United States. This service allows for the early inspection of dams and other critical facilities for possible earthquake damage. The USGS has established a policy to report earthquakes in the United States large enough to cause public concern within 30 minutes.

To provide basic data for earthquake research, the Geological Survey supports the operation of the Worldwide Standard Seismograph Network and the Global Digital Seismograph Network. The digital network is being improved and expanded through major efforts funded by the National Science Foundation (through the Incorporated Research Institutions for Seismology, IRIS) and the Department of Defense. Data from these worldwide networks are used in the study of plate tectonics, earth structure, and earthquake source mechanisms. These data are also used by the Department of Defense and other agencies in the detection and study of underground nuclear explosions. These studies are applicable to the verification of existing and proposed treaties limiting the testing of nuclear weapons underground.

In 1987, the Nuclear Regulatory Commission (NRC) began to provide funds for the joint development of a National Seismic Network in the Eastern United States. The National Network should provide, for the first time, uniform seismic detection in the eastern United States down to about magnitude 2.5. This network will eventually be expanded to provide uniform and efficient seismic monitoring coverage of the entire U.S.

Activities in FY 1990 and FY 1991 will include:

o Installation, with support from the Nuclear Regulatory Commission, of the National Seismographic Network, beginning in the Eastern United States. The Network will be capable of detecting earthquakes of magnitude 2.5 and greater, with a location accuracy of 6 miles, and will provide a more uniform data base for earthquake hazard assessment and research throughout the United States. The Network will feature broad band, high dynamic range, digital recording of seismic signals which will allow application of state-of-the-art analysis techniques for studies of wave propagation and earthquake source mechanism. Five prototype stations became operational in FY 1989 and the satellite-telemetry base station in Golden, Colorado, which will receive seismic data from the new stations as they come on line, will become operational in FY 1990.

o Continued development of more efficient methods for data distribution, primarily through the use of digital compact discs and other technical advances.

o Cooperation with the Incorporated Research Institutes in Seismology (IRIS), a university based consortium supported by the National Science Foundation and the Department of Defense, in the development of an advanced Global Seismographic Network. This network will be based, in part, on modernizing the equipment at existing worldwide stations supported by the USGS.

e. Engineering Seismology. The Engineering Seismology subelement includes the National Strong Motion Network, a network of instruments designed specifically to record severe earthquake ground shaking, and the measurement, analysis, and theoretical estimation of strong ground shaking near earthquake epicenters. These resulting data and analyses are used by engineers and architects in the design of structures and are extremely important in the siting, design, and construction of critical facilities such as buildings, dams, bridges, and powerplants.

The objectives of this subelement are to: (1) Operate a national network of strong motion instruments and an associated data center. This network consists of some 500 specially designed instruments to record very strong ground motion in natural earth materials and in structures near the source of damaging earthquakes; (2) Archive these data and disseminate them to engineers, designers, private institutions, and government agencies concerned with the siting, design, and construction of critical facilities and the establishment of building codes; (3) Develop techniques and standards for presenting the strong motion data in a more useful context; (4) Conduct research on the estimation of the level and character of strong earthquake motion for application in engineering design; and (5) Conduct research on the physics of earthquakes and the processes controlling strong ground motion.

In FY 1990 and FY 1991 activities will include:

- Analyze strong motion data acquired from existing instrumentation during the 1989 San Francisco earthquake and model ground responses for various regional geologic conditions.
- Maintain and develop computer hardware and software of the National Earthquake Strong Ground Motion Network so that it is ready to process data rapidly in the event of an earthquake.
- Select and instrument structures in California, Alaska, Hawaii and the Pacific Northwest for installation of strong motion detectors to measure building response to earthquake shaking. Design instrumentation schemes for selected structures of various design and construction.
- Research to estimate the level and characteristics of strong earthquake shaking in relationship to the physics of fault rupture and wave propagation.
- Initial large scale deployment of a portable broad band, high resolution digital data acquisition capability for seismology and engineering (GEOS).
- Continuation of analysis of data collected following the destructive earthquake in Soviet Armenia in December 1988 by the USGS National Academy of Sciences scientific team. Preliminary results suggest that near surface effects locally amplified the strong ground shaking and played a significant role in concentrating damage.

Dire Emergency Supplemental Funds

The Loma Prieta earthquake, of October 17, 1989, magnitude 7.1, caused upwards of $6 billion in damage and 62 deaths in the San Francisco Bay area and adjoining regions. The earthquake occurred along the segment of the San Andreas fault identified in 1988 as having the highest potential for a large earthquake in the greater San Francisco Bay area in the time interval 1988- 2018. No shorter term forecast of this earthquake was made, although additional concern had been focussed on this segment of the fault through the earlier issuance of two "earthquake advisories" by the California Office of Emergency Services. Because of the high long term probability estimated for a large earthquake on this segment (30% over 30 years) and the observation that no earthquakes as large as magnitude 5 had occurred along the segment since the aftershocks of the 1906 earthquake, the occurrence of each of two magnitude five earthquakes there, one in June 1988 and one in August 1989, led to increased concern.

Damage from the earthquake, although currently under investigation, seems to a large extent to have occurred in regions--and/or to have been a result of phenomena--outlined in USGS publications on the earthquake hazards of the region. An outstanding example is that the damage in the Marina District of San Francisco was apparently caused, to a large extent, by the intensified shaking at the site and subsequent liquefaction of artificial fill. Many new important questions have been identified and remain to be answered.

Following the earthquake and the resulting damage, through the passage of P.L. 101-130, section 108, the Dire Emergency Supplemental Appropriation, Congress provided an additional $12 million to the USGS on a one time basis for the National Earthquake Hazards Reduction Program to address concerns raised by the earthquake. Congress directed that $8 million of these funds be used for earthquake investigations and $4 million be used for activities leading to long-term earthquake hazard reduction. Current plans for the expenditure of these funds are described below.

Earthquake Investigations ($8 million)

- Supplementary operating expenses for studies of the causes and effects of the Loma Prieta earthquake, including engineering studies.
    - Studying the geologic and geophysical causes and effects of the earthquake, including studies of geologic conditions, source mechanics, aftershocks, ground shaking, site amplification, liquefaction, and landsliding.
    - Investigating engineering and social effects of the earthquake, including studies of structural and nonstructural damage, site effects, and the effectiveness of mitigation strategies.
    - Analyzing the geologic, geophysical and engineering causes and effects of the earthquake through mapping, drilling, trenching, and special purpose seismic recording.
- Upgrading the seismic and geodetic instrumentation in the San Francisco Bay region for studies of the Loma Prieta earthquake and to improve estimates of future earthquakes.
- Providing initial funding for the establishment of a Southern California Earthquake Center to be established as a cooperative effort among the USGS, universities, and the State of California, with additional funding requested from the National Science Foundation, to focus on studies of earthquake potential and earthquake effects in the areas of highest earthquake hazard in southern California.

Studies for Long-term Earthquake Hazard Reduction ($4 million)

- Operating expenses and research grants to initiate a focussed earthquake hazard assessment of the New Madrid seismic zone of the Central United States (including portions of Arkansas, Illinois, Indiana, Kentucky, Mississippi, Missouri, and Tennessee.
    - Research grants to universities, private firms, and State geological surveys for geologic, geophysical and engineering studies of the origin of earthquakes in the region and the effects of future earthquakes, including upgrading of regional seismic networks.
    - Supplementary operating expenses for studies by USGS personnel of earthquake potential and effects.

- Operating expenses and capital expenditures for studies of earthquake potential and effects in other States subject to major earthquakes.

A program announcement, carried out in cooperation with the National Science Foundation, soliciting proposals for studies of the Loma Prieta earthquake was issued in November 1989. Initial funding for these 1-year studies began in late December 1989. A program announcement soliciting proposals for studies in the New Madrid seismic zone will be issued in January 1990 with funding to begin in the spring of 1990.

In view of the one-time nature of the supplemental funds, emphasis in planning has been placed on 1-year studies and capital expenditures. The 1-year studies will allow documentation of the most important effects of the Loma Prieta earthquake, the initiation of efforts to understand the New Madrid seismic zone, and acquisition of some capital equipment for the Southern California Earthquake Center.

Projects funded in FY 1990 by P.L. 101-130 will be completed and the results made available. These studies include: (1) the cause and effects of the Loma Prieta earthquake of October 17, 1989; (2) evaluation of the probabilities for future damaging earthquakes in the San Francisco Bay area; (3) support of a Southern California Earthquake Center in cooperation with the State of California and academia; (4) maintenance of equipment acquired with the supplemental funds for studies in the San Francisco Bay Area and the Southern California Earthquake Center will be at the minimum level; and (5) support of upgraded regional seismic networks in the New Madrid seismic zone will be reduced.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adjusted Approp	FY 1991 Base	FY 1991 Estimate
Geodetic Surveys to monitor Earth strain using geodolite GPS receivers	13	15	13	13
Geophysical and geochemical sites	110	130	110	110
Satellite data collection platforms	68	68	68	68
Operate two color lasers	2	2	2	2
Seismograph Networks	14	14	14	14
Research Projects	118	148	118	118
Research Contracts	94	115	94	94
Technical Reports and Maps	180	225	180	180
Station Years of Seismograms from worldwide nets	130	130	130	130

Volcano Hazards

Objectives: The goals of this program are to reduce the loss of life and property that can result from volcanic eruptions, and to minimize the social and economic disruption that can result when volcanoes threaten to erupt. These goals are achieved through projects and other activities to:

- Determine the physical processes preceding, during, and following volcanic eruptions.

- Identify the potentially hazardous volcanoes and volcanic areas in the United States; delineate zones of unusually high risk; determine the nature, magnitude, and extent of possible future volcanic eruptions; and describe and delineate the nature and extent of volcanic and hydrologic hazards at these locations.

- Detect and interpret activity at erupting and potentially active volcanoes by seismic, geodetic, geophysical, geochemical, and hydrologic monitoring.

- Provide hazards assessments, warnings, and background educational materials to land managers, emergency officials, and the general public.

Base Program: The main components of this program are studies of volcanic processes, volcano hazards assessment, volcanic monitoring, and public outreach. These components provide an integrated approach for addressing the goals of the program. Investigations of volcanic processes provide fundamental scientific knowledge on which to base assessments of volcano hazards. Volcano hazards assessments help determine the location, type, and degree of volcano monitoring that should be carried out in specific volcanic areas. Objectives of each component are described below.

a. Volcanic processes are topics of fundamental research on the evolution of magma bodies, the movement of magma within the Earth's crust, volcanic eruptions, and the redistribution of volcanic materials, especially by water after eruptions. These investigations provide the scientific foundation for methods to forecast and predict volcanic eruptions. These studies are directly related to and complement studies of geothermal processes conducted under the Geothermal Investigations program in the Energy Geologic Surveys subactivity.

The current state of knowledge regarding volcanic processes does not permit prediction of the time, nature, and magnitude of volcanic eruptions except for certain types of eruptions at those volcanoes that have been closely monitored over a period of several years and for which some patterns of activity have been recognized. Further research is required to establish a correlation between volcanic activity and other observable geological phenomena, to determine the physical and chemical properties of the various types of magma and the derivative lavas, to provide models of magma generation at depth and its migration to the surface, and to predict the time and nature of volcanic eruptions.

Examples of recent research accomplishments on volcanic processes include:

- Studies of submarine rift zones of Kilauea, Mauna Loa, and Hualalai volcanoes that revealed huge lava flows, possibly correlative with major collapses in the summit areas of those volcanoes. Seaward from the island volcanoes, extensive young fields of submarine lava show characteristics of rapid emplacement, and study of these fields may drastically revise the idea of a Hawaiian hotspot and the evolution of the Hawaiian chain.

- New geodetic measurements to increase the reliability of far field horizontal and vertical data. Better reliability permits better assessment of deep processes in the rift zones, leading to better long term eruption and earthquake forecasting on Kilauea's south flank.

- Annotation of all historical references to volcanic activity and seismicity of the Island of Hawaii, providing an historical basis for interpretation of volcanic and seismic processes.

- Study of tilt and upward progression of earthquakes preceding the May 1986 eruption of Mount St. Helens that allows predictions to be made with increased confidence.

- Study of uplift and subsidence of the Yellowstone caldera that suggests alternate pressurization and depressurization of a deep hydrothermal system.

- Sponsorship and major roles for the International Volcanological Congress in Santa Fe and International Geological Congress in Washington, D.C., in 1989.

Program activities in volcanic processes during FY 1990 and FY 1991 include:

Cascades

- Studies of the subsurface beneath the crater of Mount St. Helens will continue in both years. Such studies are valuable for interpreting future eruption precursors, for understanding the details of dome growth, and for understanding the way in which this and similar silicic lava loses its volatiles.

- Continued analysis of the March-May 1980 eruptive events at Mount St. Helens and their deposits, to further decrease the chance that similar events in the U.S. or elsewhere will occur without warning.

- Development of a model for watershed systems that couples sediment transport and precipitation runoff for the volcanic debris blockage near Mount St. Helens.

- Design and construct a large manmade channel for debris flow experiments in FY 1991, in conjunction with the U.S. Forest Service, to test existing and new theories of volcanic mudflow behavior. This will allow more accurate modeling of future flows, and predictions of velocities, depths, and inundation areas.

- Initiate in FY 1990 an investigation of the effects of ground water on eruptive processes in the Cascades, through ground water monitoring, modeling, and study of eruptive products.

- Initiate in FY 1990 an investigation of the relationship between volcanism and regional tectonic extension in the vicinity of Medicine Lake Volcano, California.

Hawaiian Volcanoes

- Continued geophysical, geochemical, and petrologic monitoring of Kilauea Volcano, Hawaii, to track the movement of magma from depth and from the summit reservoir to the eruption site.

- Continued application of high resolution seismic tomography to delineate magma reservoirs and structures of the Island of Hawaii and to obtain a clearer understanding of whether and how some magma is supplied directly from depth into the rift zones.

- In FY 1990, initiate sampling and dating of young looking lava flows on submarine rises that flank the Hawaiian Islands, to determine if a large and previously unrecognized volume of magma is erupted seaward of the islands themselves.

- Continued investigations of the interactions and flow of ground water within Kilauea volcano to better understand the volcano's hydrologic system, and to provide insight into the role of ground water in Kilauea's rare explosive eruptions, such as occurred in 1790 and 1924.

Alaska

- Complete analysis of initial eruptions of Mt. Redoubt to advise responsible agencies on the potential for continued ash and flooding hazards.

- Complete documentation of past eruptions and debris flows of Mt. Redoubt.

General

- Continued study of the metal contents of volcanic gases, and their potential applications for identifying past eruptions from ice cores.

- Continued study of the fluid dynamics of complex magma gas mixtures in volcanic conduits.

- Continued evaluation of the effects of ultra-high sediment suspension (characteristic of streams in volcanic terranes) on hydraulics, bedload transport, and channel configuration, to better predict downstream sedimentation and flooding.

- Continued worldwide study of volcanic unrest including the precursors to volcanic eruptions and symptomatically similar "false alarms."

- Initiation of a long term study of how hot eruptive products melt snow and ice in FY 1990. Such melting often causes damaging debris flows, as occurred at Nevado del Ruiz in Colombia.

b. Volcano hazards assessments include the preparation of maps and reports that present the nature and possible extent of hazards from volcanic eruptions. Volcano hazards include ejection of hot and often poisonous gases, ash, and rock materials, lava flows, lateral blast of hot volcanic debris, ash falls around and carried downwind of the volcano, volcanic mudflows, and floods. The assessments provide essential information for determining risks from potential future volcanic eruptions and for actions to reduce or prevent losses. Detailed studies of the types, size, distribution, and age of historic and prehistoric eruptions form a basis for estimating the nature, frequency, and effects of future eruptions.

Volcano hazards assessments have been or are being prepared for the Nation's potentially active volcanoes. The value of such assessments was demonstrated by USGS Bulletin 1383-C. In 1978, this assessment forecast that Mount St. Helens would erupt within the next 100 years, possibly before the end of the twentieth century, and that the eruptive activity would likely be explosive. Use of the information in this hazards assessment prevented a much greater loss of life from the catastrophic eruption that ultimately occurred on May 18, 1980

Volcano hazards studies in recent years have been concentrated on the Cascade volcanoes of the Pacific Northwest where a large population and its economy are at risk. Volcano hazards maps and assessment reports, some of them preliminary, have been prepared for several Cascade volcanoes including Mount Baker, Glacier Peak, Mount Rainier, and Mount St. Helens, Washington; Mount Hood, Oregon; and Mount Shasta and Lassen Peak, California. Volcano hazards maps and assessments, some of them preliminary, have also been prepared for the Mono Lake/Long Valley caldera area, California; the volcanoes of Hawaii, Oahu, and Maui; and Mount Spurr, Mount Redoubt (currently in eruption), Mount Edgecumbe, and Mount Wrangell, Alaska. Efforts are focused on areas of greatest need for an initial or revised assessment, based on the likelihood of eruption and the degree of societal impact.

Recent accomplishments in volcano hazards assessment include:

- Publication of a volcanic hazards map for the State of California.

- Acquisition of new geologic, petrologic, paleomagnetic, and tree ring data about the Kalama and Goat Rocks eruptive periods of Mount St. Helens (A.D. 1400 late 1700's and A.D. 1800-1857) that aid judgments about continuing hazards at Mount St. Helens.

- Refinement of the geologic history of young explosive eruptions in the Medicine Lake Highlands, California, based on the volcanic ash record recovered from a drillcore at Tule Lake, California.

- New discoveries of enormous landslides from Hawaiian shield volcanoes into the sea, likely to have caused large prehistoric tsunamis ("tidal waves").

- Completion of reconnaissance geologic maps and initial volcano hazards assessments for Mount Spurr, Mount Redoubt, Mount Edgecumbe, and Mount Wrangell, Alaska. The 1989 eruption of Mt. Redoubt is disrupting domestic and trans-Pacific air traffic and threatening an oil storage facility in the Cook Inlet as anticipated; eruption of Wrangell could threaten the Alaska oil pipeline.

- Assistance to volcanologists in developing countries in the preparation of reconnaissance volcano hazards maps.

Volcano hazards assessment activities in FY 1990 and FY 1991 include:

Cascades

- Completion of a volcanic hazards assessment of the Three Sisters area, Oregon, and a hydrologic hazards assessment of Mount Hood, Oregon, in FY 1991.
- Continue compilation of information for volcanic hazards maps of Oregon and Washington in FY 1991.
- Continued volcano hazards mapping, dating, and related studies at Lassen Peak and Medicine Lake volcanoes, California; at Crater Lake and Mount Hood, Oregon; and at Mount St. Helens, Mount Rainier, and Glacier Peak, Washington.
- Continued study of sediment eroded from the debris avalanche in the Toutle River valley, near Mount St. Helens, and the effect of the sediment retention structure on the valley upstream and downstream.

Hawaii

- In conjunction with the Geothermal Investigations program, continue detailed geologic mapping of Mauna Loa volcano that will provide important input for long term, quantitative volcanic hazards maps of the Kona Coast resort area and adjoining areas.

Alaska

- Complete the estimation of the volume of snow and ice at Mount Redoubt volcano in FY 1991.

International

- Collaboration in international volcano hazards projects in Guatemala, Costa Rica, Colombia, Ecuador, Peru, Chile, Japan, Philippines, Indonesia, Cameroon, Rwanda, Zaire, and other countries as requested. Also, active participation in the International Decade for Natural Disaster Reduction (IDNDR) in both years.

c. Volcano monitoring is carried out to detect and track, as early as possible, the rise of magma in the Earth's crust so that timely warnings can be issued before an eruption. Monitoring is conducted at various levels of detail and frequency depending on the volcanic threat. Volcanoes that are actively erupting and which pose a serious, continuing threat to nearby life and property are monitored continuously, using a range of geophysical, geodetic, and geochemical techniques. Volcanoes that are currently dormant, but have been determined to be potentially dangerous, are monitored less closely, usually with seismic networks, periodic deformation measurements, and occasional visual observation.

Concentrated geophysical, geodetic, geochemical, and visual monitoring is maintained at Hawaii's active volcanoes, Mount St. Helens, Washington, the Long Valley caldera/Mono Craters area, California, and Yellowstone National Park, Wyoming. Selective monitoring is carried out at other Hawaiian, Cascades, and Alaskan volcanoes, for example Augustine and Redoubt. Hydrologic monitoring is carried out at Mount St. Helens to provide early warning of hazardous mudflows and floods that might be generated by rapid snow melt or by blockage of drainage channels during or following an eruption. Hydrologic monitoring is also carried out at Long Valley, California, to study hydrologic precursors to volcanic activity.

The Hawaiian Volcano Observatory, established in 1912 and operated continuously by the Geological Survey since 1948, monitors the Hawaiian volcanoes and has been instrumental in developing many of the volcano monitoring techniques and equipment now used worldwide. The Cascades Volcano Observatory was established in 1980 to monitor and study the continuing eruptive activity at Mount St. Helens (expected to continue for several decades) and to serve as a base for periodic monitoring of the other potentially active Cascades volcanoes. Data from seismic monitoring of Washington and Oregon volcanoes are analyzed by a joint Geological Survey/University of Washington team. Seismic coverage of California volcanoes is conducted by the Geological Survey through its regional office in Menlo Park, California.

Extensive monitoring studies in the long dormant but potentially dangerous Long Valley caldera/Mono Craters volcanic area in eastern California were begun in 1980 after a sudden increase in seismic activity and ground deformation. Seismic and geodetic monitoring have suggested the presence of a partly molten magma reservoir approximately 5 miles beneath the Long Valley caldera. Nearly 20 inches of ground uplift occurred in this area between 1980 and 1984. Earthquakes near the town of Mammoth Lakes suggest that magma may have been injected up through the crust to depths as shallow as 2 miles.

At Yellowstone National Park, recent magma related activity is similar in many respects to the situation at Long Valley. The Yellowstone region is one of extensive recent volcanism and has experienced several strong earthquakes, numerous earthquake swarms, significant hydrothermal changes, and almost 36 inches of crustal uplift during the past century. In order to document continuing changes, the Geological Survey increased its seismic and geodetic monitoring effort there in 1983, and that increased level of monitoring continues. Emergency response teams are assembled when required, as for example at Augustine Volcano, Alaska, in 1986, and Galeras Volcano, Colombia, in 1989.

Recent accomplishments in volcano monitoring include:

o In FY 1988, equipment was installed for the Alaska Volcano Observatory in Anchorage, in cooperation with the Geophysical Institute of the University of Alaska at Fairbanks and the Alaska Division of Geological and Geophysical Surveys. Operation of the observatory in FY 1989 provided improved seismic monitoring of volcanoes in the Cook Inlet.

o Progressive improvements in predictive capability at Mount St. Helens, for both volcanic and hydrologic hazards, that have permitted continued visitor activity at the National Volcanic Monument and normal activities in nearby communities. In FY 1989, monitoring showed relative quiescence but occasional small swarms of earthquakes.

- Periodic leveling and trilateration surveys at Mounts Baker and Rainier, Washington; Mount Hood, Newberry, and South Sister volcanoes, Oregon; and Mount Shasta and Lassen Peak, California.

- Implementation of real time seismic and tilt monitoring at the Hawaiian Volcano Observatory (HVO), showing earthquake locations within 30 seconds and magnitudes after a few minutes. Data can be continuously seen either in map view or cross section, a feature that is particularly useful during a preeruption earthquake swarm. All existing electronic tiltmeters are also telemetered to HVO and, with this combination of seismic and tilt data, short term forecasting is greatly enhanced.

- Continued application of Global Positioning System (GPS) technology to measure deformation of the entire Island of Hawaii. Data are being gathered from the south flank of Kilauea to evaluate the southward motion of that flank during the current rift eruption.

- Continued monitoring of the Long Valley area, California that has shown continuing, relatively slow inflation, and regional extension, punctuated occasionally by moderately strong earthquakes of regional tectonic origin and swarms of smaller earthquakes of possibly magmatic origin.

- Analysis of data from resurveys of the Yellowstone area during the summers of 1987-1989 that included leveling inside and outside the caldera, an electronic distance survey, and establishment of baseline values for studies of vertical and horizontal strain using the Global Positioning System (GPS).

- Development of a portable real time seismic data acquisition system that can be deployed on short notice at any restless volcano. Much of the analysis that formerly required mainframe computers in offices can now be done with microcomputers in the field.

- Development of systems that can track and display seismic energy release and other volcanic parameters during volcanic crises.

- Assistance by the Geological Survey's Volcano Crisis Assistance Team to several foreign governments, notably in Latin America, with support from the Office of Foreign Disaster Assistance of the Agency for International Development.

Activities in volcano monitoring in FY 1990 and FY 1991 include:

- Intensive seismic, geodetic, geochemical, and geophysical monitoring of Kilauea and Mauna Loa volcanoes, Hawaii; Mount St. Helens, Washington; Long Valley caldera, California; Yellowstone caldera, Wyoming; and Augustine and Mt. Redoubt volcanoes in Alaska.

  -- A major explosive eruption of Mt. Redoubt volcano began at 2:25 p.m. EST, January 8-9, 1990, resulting in an ash plume rising 35,000 to 45,000 feet above the surface, and was clearly visible in Anchorage, Alaska, 110 miles to the northeast, as a mushroom-shaped cloud. Since the beginning of the current activity in December, this was the most powerful eruption of the volcano to date. USGS teams are continually monitoring the area to make determinations of current hazards.

- -- The historical geologic record of past eruptions of Mt. Redoubt indicates the volcano remains active for periods of up to 3 years or more. Therefore, additional explosive events similar to January 8th are anticipated.
- -- Undertaking enhanced monitoring of Mt. Redoubt including development of a capability for giving warnings of debris and mudflows caused by melting snow, ice, and glaciers that threaten human life and critical facilities. The potential for such flows will threaten throughout the duration of the eruption activity.

- o Continued surveillance monitoring of other potentially active U.S. volcanoes, in Washington, Oregon, California, and Hawaii, for early detection of unrest that would require more intensive monitoring.
- o Continued hydrologic monitoring at Mount St. Helens, including measurement of the long term erosion and stability of the three major lakes impounded by the debris avalanche in 1980, and operation of monitoring gages and other instruments to provide early detection of potentially damaging lake breakouts and consequent floods or debris flows.
- o Continued improvement of techniques and instrumentation for monitoring volcanic seismicity, ground deformation, and gas emission.
- o Adaptation of commercially available gas sensors to gas problems at active volcanoes.

d. Public outreach

Assessment of volcanic hazards and surveillance of active volcanoes must be coupled with public outreach if scientific information is to be applied to practical risk reduction. A growing set of projects is aimed at translating scientific information about volcanoes into terms that are meaningful to public officials and laymen and that can be used in practical risk reduction measures such as land use planning, preparation of emergency evacuation plans, and decisions about evacuation during volcanic crises.

Recent accomplishments in public outreach include:

- o Advice to State and local authorities, other federal agencies, and the news media about volcanic hazards at specific volcanoes, in the forms of hazards maps, information bulletins, and warnings, such as recent warnings of ash hazard to aircraft from Redoubt volcano in Alaska.
- o Publication of a layman's pamphlet on volcanic hazards of Mount Shasta. Response to this pamphlet will guide preparation of similar pamphlets for other Cascades volcanoes.
- o Publication of several general interest reports about activities of the Hawaiian and Cascades Volcano Observatories.

- Cooperation with the Smithsonian Institution on "Inside Active Volcanoes," a major exhibit about Kilauea and Mount St. Helens. After a 3 month showing in Washington, D.C., the exhibit will travel to about eleven other U.S. cities during the next 3 years.

Activities in public outreach for FY 1990 and 1991 include:

- Publication of a layman's booklet on volcanic hazards for the Island of Hawaii, based upon integration of various geologic, geophysical, and geochemical data.
- Publication of a layman's booklet on volcanic hazards of Mount Hood, similar to that about hazards of Mount Shasta.
- Continued notification of volcanic hazards at currently or recently restless volcanoes to responsible local, State, and Federal officials.
- Continued work on a videotape about volcanic hazards and how they can be avoided.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate
Volcano hazards assessments				
New starts	2	2	2	1
In progress	8	8	8	9
Completed this FY	1	2	2	2
Volcano monitoring networks				
Geologic	6	6	6	6
Hydrologic	2	2	2	2
Research projects on volcanic processes	8	8	8	8

Landslide Hazards

Objectives: To reduce landslide losses that occur throughout the United States.

Principal program goals include:

- Development of new technologies to map and assess landslide susceptibility and risk.
- Advancement of the understanding of landslide processes and the geologic, topographic, hydrologic, and cultural factors that control slope failure.
- Development and demonstration of landslide prediction capabilities to avoid, prevent, or mitigate landslide damage.

- o Reduction of landslide losses through Federal, State, and local application of research results in improved planning, engineering design and construction, and warning and emergency response.

Base Program: Landslides are among the Nation's most costly and destructive geologic hazards, causing $1 to 2 billion in economic losses and 25 to 50 deaths yearly in the United States. A substantial portion of landslide losses occur to Federal roads, buildings, forests, fisheries, and park lands, and to State, local, and private facilities and works supported by Federal loans and grants. Expanding urban development onto landslide prone hillsides has prompted an increasing incidence of landslide disasters and an accompanying escalation in Federal disaster relief that includes financial assistance.

Although the consequences of landslides are local in their effect, the characteristics and environment in which landslides occur and the damage they cause are very similar throughout the country. Thus, understanding of landslides and their hazards can provide a nationwide reduction of landslide losses as well as at the State and local levels. New techniques (such as Geographic Information Systems) for increasing awareness about landslide problems are not yet generally available at the State or local level, or the information about the extent of landslide processes and their hazards is incomplete, inaccurate, or not widely disseminated.

The Landslide Hazards Program contributes to the U.S. Global Change Program. Landslides are often triggered by heavy precipitation and the identification of ancient landslides thus can contribute information on past climates. Climatic change, such as increased precipitation or changes in regional distribution of precipitation, could increase the potential for landsliding. Landslide studies are being directed toward evaluating the effects of global climate change on landslide processes.

The USGS Landslides Hazards Program is the primary focus of landslide research in the United States Government, and the main components include Landslide Process and Prediction Studies, Landslide Susceptibility and Risk Mapping, Landslide Recurrence and Slope Evolution, and Research Applications and Technology Transfer.

a. Landslide Process and Prediction Studies. The USGS is conducting a broad, intensive investigation of landslide processes to predict landslide activity. Landslide activity is predictable if landslide processes are understood. USGS scientists are working to develop a precise understanding of landslide processes through: (a) documentation of historic episodes of landslide activity; (b) theoretical and laboratory modeling of the landslide processes; and (c) in situ monitoring of landslide failures at experiment sites.

Recent accomplishments in landslide process and prediction studies include:

- o Detailed monitoring of pore water pressure data from instrumented slopes detected an abrupt drop in pore pressure immediately before failure of the slopes. This observation has potential for practical application in landslide hazard warning systems.

- Analysis of monitoring and sample data in the Lexington burn area of northern California have indicated a fundamental difference in the slope response after burning compared to previously documented responses in southern California. Debris flows are a type of very fluid, rapidly moving landslide that commonly occur in southern California during storms on recently burned watersheds. In subsequent storms the Lexington burn area experienced no major debris flow problems.

Activities planned for FY 1990 and FY 1991 include:

- In Oahu, Hawaii, a study of the mechanics of slow moving large landslides, using surface and subsurface testing, instrumentation, and monitoring, will be carried out to determine their potential application to hazard mitigation in urban areas.

- The real time landslide warning system will be refined using a variety of techniques, including rainfall, runoff analysis, and soil tension measurements in the San Francisco Bay region. This technology will be transferred to other landslide prone areas, including Hawaii and possibly Puerto Rico and southern California.

b. Landslide Susceptibility and Risk Mapping. Maps of regional landslide hazards are a prerequisite to a successful national landslide hazards reduction program. Information on susceptibility to future landslide movement and the risk to population and structures posed by landslides must be available in order to develop improved land use planning, engineering design and construction, and warning and emergency response.

State Surveys are being encouraged to inventory the location, extent, and nature of landslide activity in their State and to contribute their data to regional maps. These maps are a critical building block toward determining regional and State landslide susceptibility. USGS scientists are using new Geographic Information System (GIS) and other computer technologies to transform State landslide inventory data, together with USGS research on regional landslide processes and their occurrence, into state of the art assessments of landslide susceptibility and risk.

Recent accomplishments include:

- Development of a systematic, automated method to delineate debris flow hazard areas at scales ranging from local to regional. The method uses topographic form, as portrayed by digital elevation models, to map likely sources and runout paths of debris flows.

- Compilation of a national U.S. and worldwide assessment of the extent and economic significance of landsliding. This assessment was assembled from requested contributions of international landslide experts on a national or regional basis. This effort demonstrated that the extent and economic impact was considerably greater than previously documented in practically all regions.

Activities planned for FY 1990 and FY 1991 include:

- o Compilation of landslide hazard maps in Hawaii is underway and studies to generate similar maps for southern California are being initiated in FY 1990. These maps can be used to assess the risk for rapidly urbanizing areas having a high susceptibility to landslides.

- o Landslide susceptibility maps at 1:500,000 scale of Utah and New Mexico, using previously prepared landslide inventories and Geographic Information System (GIS) techniques, will be completed in FY 1990.

- o A prototype landslide susceptibility map will be completed in FY 1990, using digital databases of an inventory of 1985 landslides in Puerto Rico, bedrock lithology, bedrock structure, soil thickness and physical properties, topography, and rainfall measurements from the October 1985 storm.

- o Using supplemental funds provided to the USGS National Earthquake Hazards Reduction Program by Congress to study the October 17, 1989, Loma Prieta, California, earthquake, the extent and significance of damaging landslides from this earthquake will be examined in FY 1990.

c. Landslide Recurrence and Slope Evolution. This element of the USGS Landslide Hazards Program examines the short and long term effects of climate on landslide activity and distribution and the role of landsliding as a geomorphic agent on long term landscape evolution.

Activities planned for FY 1991 include:

- o In Colorado and Utah, slope processes will be correlated with climatic records to examine short and long term climatic influences. Dating methods using events and environmental variations in former times as evidenced in tree rings and aged wood (dendrochronology) and other physical and biological techniques for determining precise landslide recurrence frequency will be used to reconstruct local paleoclimates.

- o In the central Appalachian Mountains, isotope dating of weathered quartzite boulders at the surface of debris flow deposits will be used to decipher the history of climate change during the past 1 million years in selected areas and to define rates and controls on landslide occurrence.

d. Research Applications and Technology Transfer. The USGS Landslide Hazards Program seeks to expand public awareness of the potential for landslide loss reduction through appropriate dissemination and applications of landslide susceptibility maps and risk assessments, regional and local landslide prediction procedures and methodologies, and new knowledge of landslide processes gained from research. The USGS is working to provide private individuals, commercial and industrial establishments, and local, State and Federal government institutions with the capability to systematically evaluate the level of landslide hazard to which they are exposed, so that they can choose both an effective and economic response to their landslide problems. The program encourages the prompt and productive application of research results through improved planning, siting, engineering design and construction, and warning and emergency response.

Recent accomplishments include:

- Systematically derived landslide probabilities were combined with property value data to forecast the potential for economic losses in scenarios from proposed development and to identify quantitatively the potential benefits of mitigation activities in the Cincinnati, Ohio, area. The results of this research are now being applied to other areas of the Nation such as Los Angeles, California.
- Conducted workshops and field trips in central California on landslide identification, prediction, and mitigation for landslide experts attending the 28th International Geological Congress.

Activities planned in FY 1990 and FY 1991 include:

- In FY 1990 and FY 1991, documentation of a landslide warning system developed by the Geological Survey for predictions and warnings of debris flows in the San Francisco Bay region, California will be underway. Such documentation will include discussion of cautions about using the warning system, development of precise wording of potential warnings and establishing a priority for a notification procedure when a warning is issued. Studies are underway to incorporate data from the October 17, 1989, Loma Prieta, California earthquake to determine if it is possible to predict the behavior and issue warnings with respect to large landslides that were initiated by this earthquake. The study will also attempt to determine if these landslides are susceptible to reactivation in the future by winter storms.
- In FY 1990 and FY 1991, a centralized clearinghouse of information on recent landslide events, publications, and research activities serving a wide spectrum of government, academic, and private interests responsible for reduction of landslide losses will serve as a National Landslide Information Center.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate
Process and Prediction Studies				
Debris Flows	3	2	2	2
Slides and Slumps	3	3	3	2
Rock Falls	2	2	2	1
Landslide Mapping				
Probability Studies	1	1	1	2
Regional Assessments	5	5	5	4
State Coops	1	1	1	1
State Susceptibility Maps	2	2	2	1
National Overview	1	1	1	0
Landslide Recurrence and Slope Evolution	0	0	5	5
Research Applications	1	1	1	2

Justification of Program and Performance

Activity: Geologic and Mineral Resource Surveys and Mapping
Subactivity: Geologic Framework and Processes

(Dollar amounts in thousands)

Program Elements		1990 Enacted to Date	1990 Adjusted Approp.	1991 Base	1991 Estimate	Inc.(+) Dec.(-) from Base
National Geologic Mapping	$	19394	19132	19472	19472	0
	FTE-T	237		237	237	0
Deep Continental Studies	$	3061	3020	3047	3047	0
	FTE-T	16		16	16	0
Geomagnetism	$	1733	1710	1752	1752	0
	FTE-T	31		31	31	0
Climate Change	$	3042	3001	3049	9749	6700
	FTE-T	32		32	52	20
Coastal & Wetlands Processes	$	6100	6018	6036	2936	-3100
	FTE-T	11		11	4	-7
Total Requirements	$	33330	32881	33356	36956	3600
	FTE-T	327		327	340	13

Impact of Public Law 99-177

	1990 Enacted to Date	PL 99-177 B.A. Cancellation	1990 Adjusted Approp.
Geologic Framework and Processes	33330	-449	32881

The impact of this reduction on this subactivity will decrease the operating funds for all projects and result in curtailed fieldwork, equipment purchases, and data analyses.

Authorizations

43 U.S.C. 31(a)	The Organic Act of 1879 authorizes the Geological Survey to conduct "an examination of the geological structure, mineral resources, and products of the public domain."
15 U.S.C. 2901 2908	The National Climate Program Act of 1978 31 U.S.C. 2 established a national climate program to assist the Nation and the world to understand and respond to

natural and man induced climate processes and their implications. The Act established a National Climate Program Office at the National Atmospheric and Oceanic Administration to coordinate mandated climate related research among various Federal agencies, including the USGS.

42 U.S.C. 5845(c)

The Energy Reorganization Act of 1974 directs all other Federal agencies to "...(2)...furnish to the (Nuclear Regulatory) Commission...such research services for the performance of its functions; and (3) consult and cooperate with the Commission on research development matters of mutual interest and provide such information and physical access to its facilities as will assist the Commission in acquiring the expertise necessary to perform its licensing and related regulatory functions." The Geological Survey conducts geological mapping in areas where future nuclear reactor construction is anticipated and conducts topical investigations of various geologic processes that could imperil the safe operation of the reactors or other critical energy facilities.

42 U.S.C. 4321 et seq.

The National Environmental Policy Act of 1969 requires the Geological Survey to comply with Section 102(2)(C) which pertains to review of Environmental Impact Statements (EIS's) prepared by other agencies. The Survey reviews EIS's prepared for nuclear power plant and other critical facilities sites.

22 U.S.C. 3201 et seq.

The Nuclear Non-Proliferation Act of 1978 provides that under Title V United States Assistance to Developing Countries the Geological Survey assists, through the State Department and Agency for International Development, in evaluation of nuclear facilities sites in other countries.

42 U.S.C. 5201 et seq.

The Disaster Relief Act of 1974, Section 202(a), states that "The President shall insure that all appropriate Federal agencies are prepared to issue warnings of disasters to State and local officials." In addition, Section 202(b) states that "The President shall direct appropriate Federal agencies to provide technical assistance to State and local governments to insure that timely and effective disaster warning is provided." The Director of the Geological Survey, through the Secretary of the Interior, has been delegated the responsibility to issue disaster warnings "... for an earthquake, volcanic eruption, landslide, or other geologic catastrophe."

43 U.S.C. 31	Section 4 of the Continental Scientific Drilling and Exploration Act of 1988 requires that "The Secretary of the Department of Energy, the Secretary of the Department of the Interior through the United States Geological Survey, and the Director of the National Science Foundation assure an effective, cooperative effort in furtherance of the Continental Scientific Drilling Program of the United States."
33 U.S.C. 883(a)	The Great Lakes Shoreline Mapping Act of 1987 in Section 3202(a) requires that the Director of the National Oceanic and Atmospheric Administration "...in consultation with the Director of the United States Geological Survey, shall submit to the Congress a plan for preparing maps of the shoreline of the Great Lakes under section 3203." The act further requires in Section 3203 that "...subject to authorization and appropriation of funds, the Director, in consultation with the Director of the United States Geological Survey, shall prepare maps of the shoreline areas of the Great Lakes."

The Geologic Framework and Processes subactivity undertakes basic geologic research and investigates environmental and dynamic earth processes. These activities are conducted to: (1) acquire fundamental data necessary to determine the Nation's geologic framework and the processes that shape it, largely through preparation of a National geologic map data base that will satisfy the geologic map needs of the country; (2) determine the nature of the Earth's deep crust and upper mantle; (3) measure changes in the strength and direction of the Earth's magnetic field; (4) understand climate change and its past and future effects on land and water resources; and (5) address shoreline retreat and land loss from the geologic perspective along shorelines in the United States where shore erosion and wetlands loss is prominent.

The Geologic Framework and Processes Subactivity consists of four program elements. The National Geologic Mapping Program is designed to increase the production rate and usefulness of geologic maps. The program contains four components: (1) the Federal Geologic Mapping (GEOMAP) component of the program focuses USGS geologic mapping activities on earth science issues that have high national priority. (2) The Federal/State Cooperative Geologic Mapping (COGEOMAP) component focuses cooperative State and Federal geologic mapping activities on earth science issues of mutual interest and which have the highest priority to both Federal and State governments. (3) The Geochronology and Geologic Processes component provides data on the age of earth materials (see Figure G-3) and contributes information about the geologic processes that affect the origin and distribution of rocks and structures in the Earth'scrust; these two objectives ensure that geologic maps have their fullest interpretive value and provide basic research data essential to the success of other programs conducted by the USGS and other Federal agencies. (4) The Modernization of Mapping Techniques (MODMAP) component applies automated data processing technology to geologic mapping in order to increase the production rate and cost effectiveness of geologic maps and to facilitate the production of derivative special purpose maps by digital integration of geologic map data with other earth science and geographic data bases.

Figure G-3.--MAJOR GEOCHRONOLOGIC AND CHRONOSTRATIGRAPHIC UNITS

Subdivisions in use by the U.S. Geological Survey (map symbols)						Age estimates of boundaries in million years[1, 5]	
Eon or Eonathem	Era or Erathem	Period or System		Epoch or Series			
Phanerozoic	Cenozoic (Cz)	Quaternary (Q)		Holocene		0.010	
				Pleistocene		2	(1.7–2.2)
		Tertiary (T)	Neogene Subperiod or Subsystem (N)	Pliocene		5	(4.9–5.3)
				Miocene		24	(23–26)
			Paleogene Subperiod or Subsystem (Pε)	Oligocene		38	(34–38)
				Eocene		55	(54–56)
				Paleocene		63	(63–66)
	Mesozoic (Mz)	Cretaceous (K)		Late	Upper	96	(95–97)
				Early	Lower	138	(135–141)
		Jurassic (J)		Late	Upper		
				Middle	Middle		
				Early	Lower	205	(200–215)
		Triassic (T̶R)		Late	Upper		
				Middle	Middle		
				Early	Lower	~240	
	Paleozoic (Pz)	Permian (P)		Late	Upper		
				Early	Lower	290	(290–305)
		Carboniferous Periods or Systems (C)	Pennsylvanian (P̶)	Late	Upper		
				Middle	Middle		
				Early	Lower	~330	
			Mississippian (M)	Late	Upper		
				Early	Lower	360	(360–365)
		Devonian (D)		Late	Upper		
				Middle	Middle		
				Early	Lower	410	(405–415)
		Silurian (S)		Late	Upper		
				Middle	Middle		
				Early	Lower	435	(435–440)
		Ordovician (O)		Late	Upper		
				Middle	Middle		
				Early	Lower	500	(495–510)
		Cambrian (Є)		Late	Upper		
				Middle	Middle		
				Early	Lower	~570[2]	
Proterozoic (P̶)	Late Proterozoic[3] (Z)					900	
	Middle Proterozoic[3] (Y)					1600	
	Early Proterozoic[3] (X)					2500	
Archean (A)	Late Archean[3] (W)					3000	
	Middle Archean[3] (V)					3400	
	Early Archean[3] (U)					(3800?)	
pre-Archean[4] (pA)						4550	

[1] Ranges reflect uncertainties of isotopic and biostratigraphic age assignments. Age of boundaries not closely bracketed by existing data shown by ~. Decay constants and isotopic ratios employed are cited in Steiger and Jager (1977).

[2] Rocks older than 570 Ma also called Precambrian (pC), a time term without specific rank.

[3] Geochronometric units.

[4] Informal time term without specific rank.

[5] Age estimates for the Phanerozoic are by G. A. Izett, M. A. Lanphere, M. E. MacLachlan, C. W. Naeser, J. D. Obradovich, Z. E. Peterman, M. Rubin, T. W. Stern, and R. E. Zartman at the request of the Geologic Names Committee. Age estimates for the Precambrian are by International Union of Geological Sciences Working Group on the Precambrian for the United States and Mexico, J. E. Harrison, Chairman. The chart is intended for use by members of the U.S. Geological Survey and does not constitute a formal proposal for a geologic time scale. Estimates of ages of boundaries were made after reviewing published time scales and other data. Future modification of this chart will undoubtedly be required. The general references apply where references are not given for specific boundaries.

Geologic Names Committee, 1983

The Deep Continental Studies Program addresses fundamental questions about the composition, structure, formation, and evolution of the middle and lower crust and upper mantle. Information obtained through research will be integrated with surface geologic mapping to produce three dimensional models of the lithosphere. These models improve our understanding of the character and distribution of geologic structures and resources at depth and of catastrophic natural hazards caused by some of these structures.

The Geomagnetism Program supports observatories and laboratories which measure changes in the strength and direction of the Earth's magnetic field. The data are used to prepare and publish navigational charts, topographic maps, and specialized magnetic surveys used by industry and Federal and State governments.

The Climate Change Program provides a basic understanding of the causes of climate change and past and future impacts of these changes; establishes the long term history of the rates, frequencies, and magnitudes of climate change through study of the geologic record; determines the effects of climate change on natural resources; and improves techniques for delineating climate history.

The Coastal and Wetlands Processes Program evaluates historical sea level changes; investigates the movement of sediment masses, oceanic influences, and manmade effects of sediment diversion; identifies highly vulnerable coastal areas; provides summaries of erosion rates and their causes; and identifies possible measures to counteract land loss.

National Geologic Mapping Program

Objectives: The program has three main objectives: (1) to determine the geologic framework of the Nation through systematic geologic mapping and analysis of regions where national priorities have been identified; (2) to improve coordination among all Federal, State, academic, and private sector producers and users of geologic map information in order to facilitate planning and priority setting and in order to encourage cooperative studies that eliminate duplication of effort; and (3) to develop new technologies and methods that improve the production of geologic maps and that allow geologic-map information to be combined with other earth-science and demographic data bases to yield derivative maps that address specific earth-science problems. These objectives will increase the quantity, timeliness, versatility, and usefulness of geologic maps, and will lead to systematic expansion of the Nation's geologic-map data base.

Base Program: The National Geologic Mapping (NGM) program provides basic geologic information for use by Federal and State agencies, academia, and the private sector. This information is disseminated in various geoscience products, including primary geologic maps, derivative special-purpose maps, and topical reports that elaborate, interpret, and translate the geologic-map information and ancillary data. Maps and companion reports generated by the program contribute to the national geologic-map data base, provide a relational datum for basic-research investigations, and provide a framework for addressing geologic hazards, land-use planning, facilities' siting and management, and mineral, energy, and water resources.

The geologic map is a primary research product of the NGM program. A geologic map is a graphical information display that uses a combination of colors, lines, and symbols to depict the geologic setting of an area and to interpret the events which shaped that setting. The graphical display not only describes bedrock and surficial units and geologic structures visible at the surface but forms a three-dimensional model that predicts the configuration of rock bodies and structures in the subsurface. This combination of descriptive and predictive information makes the geologic map a powerful research tool for understanding the Earth's composition and structure, internal and external processes, and history.

The standard geologic map (see Figure G-4) is a general purpose product; that is, it conveys essential information about all aspects of the geologic setting, not just one or a few aspects. For a prescribed area, such a map might identify bedrock formations like granite, limestone, sandstone, or shale and their altered, metamorphosed, or mineralized equivalents; surficial units like soils, landslides, and sediment deposited by streams, wind, glaciers, and hillslope processes; and geologic structures like folds, faults, and fractures. A multipurpose geologic map thus provides a single comprehensive record of a diverse suite of geologic features.

Because of its comprehensive information content, a geologic map is the primary data base for a broad range of societal and scientific applications (Figure G-4). Each specialized application extracts one or more information attributes from the general-purpose geologic map and combines these attributes into special-purpose derivative maps that address specific geologic features, processes, or applications. Derivative maps can be generated (1) by distilling selected information from the primary data base or (2) by developing and expanding a particular part of the primary data base through follow-on specialized investigations. The geologic map thus should be viewed as a first order information layer that can be combined with information layers from other geologic, geographic, hydrologic, or demographic disciplines.

Much of the primary and derivative geologic-map information for the Nation is produced by the NGM program. The program was initiated in FY 1988 in response to the widespread recognition that a coherent national program of geologic mapping is required in order to systematically develop the Nation's geologic-map information base (National Research Council, 1987, 1988). The program is designed to be an association of Federal and State mappers that will increase geologic map production nationwide by (1) stimulating geologic mapping activities in all sectors and (2) by developing and implementing more efficientmethods of producing and disseminating geologic map information. The Program's implementation is guided by recommendations that emerged from a National Academy of Sciences review of geologic-mapping activities in the U.S. Geological Survey (National Research Council, 1987, p. 2-7).

In response to the National Research Council recommendations, the NGM program has developed the following procedures that facilitate the planning and coordination of geologic-mapping activities and that promote effective dissemination of information to the users of the national geologic-map data base:

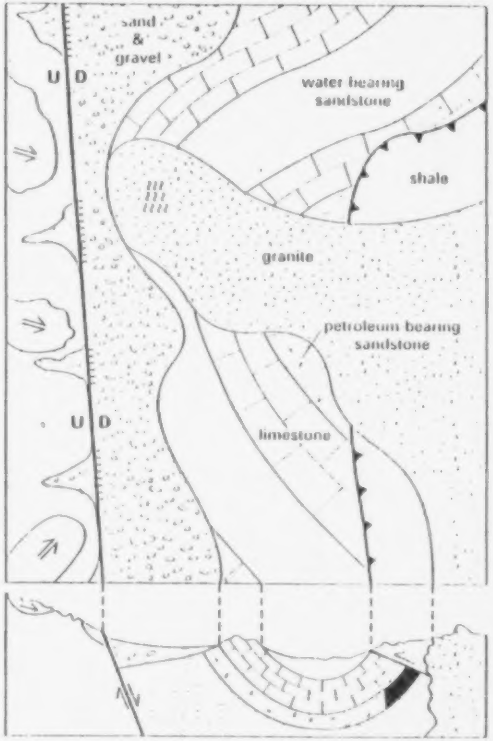
GEOLOGIC MAPS: PRIMARY DATA BASE FOR THE EARTH SCIENCES

SUPPORT RESEARCH
AND DECISIONS BY:

- Government
- Industry
- Academia

IDENTIFY
GEOLOGIC HAZARDS:

- Earthquake faults
- Landslides
- Land subsidence
- Radon
- Volcanoes


sand & gravel
U D
water bearing sandstone
shale
granite
petroleum bearing sandstone
U D
limestone

LOCATE
NATURAL RESOURCES:

- Water
- Energy
- Mineral
- Industrial

FACILITATE
LAND-USE PLANNING:

- Critical facilities
- Hazardous-waste repositories
- Urban development

Figure G-4.--Multiple uses of geologic maps in addressing national needs.

- Priority setting mechanism: The NGM program has developed a comprehensive mechanism for annually identifying national geologic-mapping needs and for communicating those needs to the earth science community (see Figures G-5a, 5b). This priority setting mechanism combines national need together with scientific need to create a balanced research program that responds to both short-term and long-term mapping requirements. The process of identifying the requirements that will be addressed in FY 1991 is currently underway and will be completed in anticipation of the FY 1991 field season.

  National need: National need is defined as the prioritized geologic map requirements of a broad user community--including information users in Federal and State agencies, the private sector, and academia. The need for geologic maps can be characterized as "national" in scope if (1) maps produced in an area or region will address multiple overlapping needs or (2) the maps address a single need that is compelling because of its impact on the economic, environmental, or resource requirements of the Nation or (3) the map area crosses political boundaries. The NGM program annually develops a suite of national priorities through three avenues: (1) systematic outreach efforts to various agencies within the Federal government, with recent emphasis on the Environmental Protection Agency (EPA), Bureau of Land Management (BLM), National Park Service (NPS), and various agencies within the U.S. Department of Agriculture (see Figure G-5a); (2) dialogue with State geological surveys to identify mutual Federal and State priorities to be addressed not only by the COGEOMAP component of the program but also by collaborative investigations between the GEOMAP and COGEOMAP components; and (3) regional workshops where public and private sector map users can collectively identify geologic mapping priorities within specific regions that are characterized by their unique geologic makeup and economic infrastructure.

  Scientific need: Scientific need is defined as critical earth-science problems whose solutions transcend the boundaries of local project areas and thereby contribute to the understanding of earth materials or earth processes elsewhere in the Nation. Such problems are defined as "critical" because they represent opportunities to advance the frontiers of geologic interpretation. The level of scientific need can be measured by the benefit gained from transferring geoscience information from a local area throughout an entire region. The NGM program has a peer-review mechanism for evaluating the scientific relevance and timelinessof mapping investigations proposed in response to program funding for basic research mapping.

The NGM program's priority-setting mechanism allows long-term programmatic continuity to be shaped both by national need and by scientific need. In this mechanism, the specific requirements of the map using community can influence program development in two ways: (1) multiple overlapping needs can be used to develop long-term programmatic commitment to large regions where the overall geologic framework must be understood in order to benefit the multiple users; and (2) specific needs can be used to guide short-term programmatic response to areas where a single need is compelling. Overall, this approach to program development will lead to systematic long term growth of the Nation's geologic map data base.

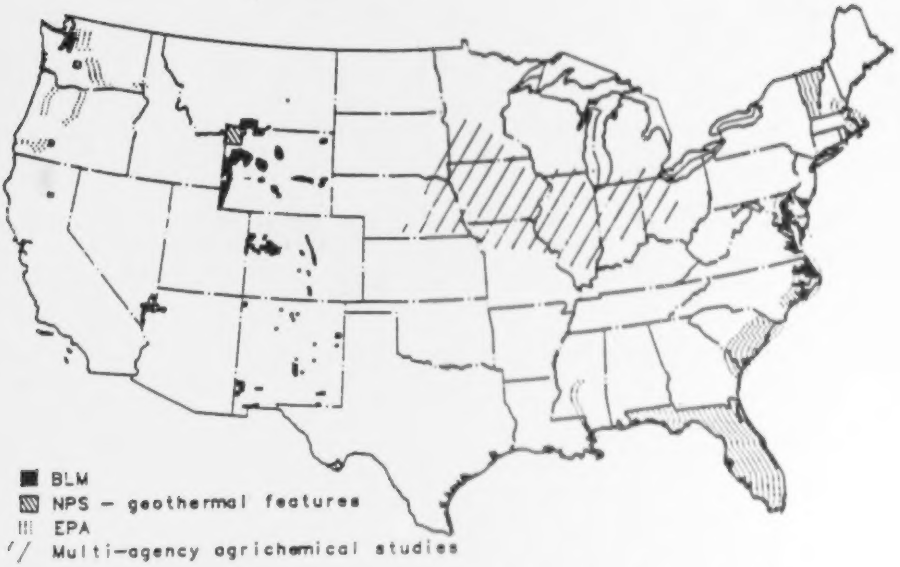

■ BLM
▨ NPS – geothermal features
||| EPA
// Multi–agency agrichemical studies

Figure G-5a.--Map showing representative requests for geologic mapping from other Federal agencies.

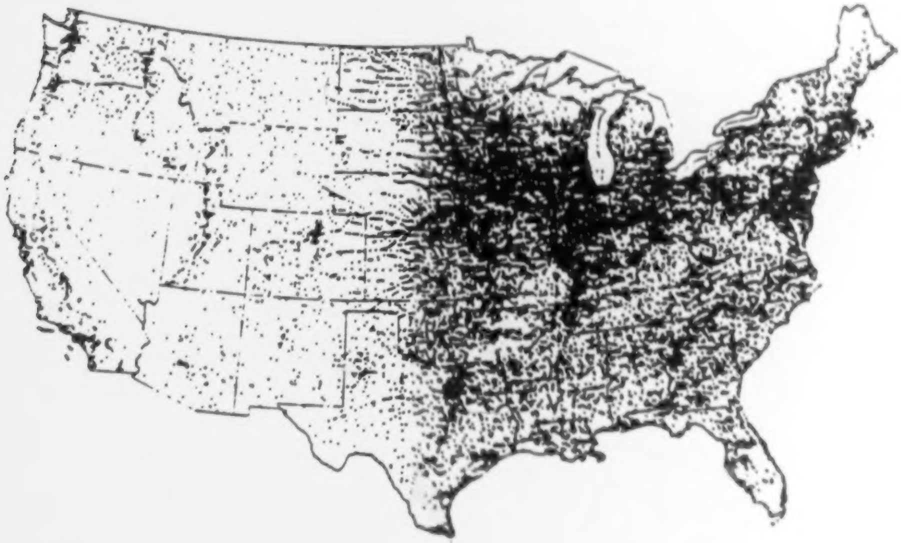


Figure G-5b.--Map showing population distribution by 1980 census locations.

- Geologic-mapping inventories: In order to evaluate the status of map coverage in the Nation, the NGM program maintains a digital inventory of all geologic maps that have been published by Federal and State geological surveys and by other geoscience organizations. The program also maintains a digital inventory of current geologic mapping activity by the USGS; the comprehensive inventories are distributed to all parts of the geologic mapping community.

- Digital methods for geologic mapping: The NGM program is developing digital techniques that allow a geologist to prepare maps for publication and analyze multiple datasets more effectively. Digital methods also allow map users to apply geologic data sets in other analyses for their own unique requirements.

- Geologic map standards: The increasing application of digital techniques to geologic mapping requires modern guidelines and standards for the content, quality, and format of geologic maps. A draft version of these standards has been prepared by the USGS with participation by the Association of American State Geologists.

- During FY 1990, steps are being taken to incorporate national geologic mapping requirements and coordination of Federal geologic mapping activities by the USGS in the OMB Circular A-16 process. The A-16 process requires an annual solicitation of map requirements from other Federal agencies so that overlapping needs can be identified and the highest priority needs can be coordinated. An economic study of the cost benefits derived from the use of geologic maps and of how to decrease the cost of producing such maps is underway.

- A draft plan for implementation of a coordinated program of geologic mapping for the Nation that will be carried out by the USGS and State agencies has been prepared and distributed to State Geological Surveys. This plan includes a component to strengthen national education in geologic field methods and analysis. Refinement of the plan will continue in FY 1991.

Research Strategy: Research in the NGM program currently is conducted under each of the four program components.

1. Federal Geologic Mapping (GEOMAP) The long term objective of the Federal Geologic Mapping component is to build integrated, map-based geoscience data sets for a national geologic-information base that can be used to solve earth-science problems of national or regional concern. The geologic map is the cornerstone for this data base, and in the NGM program's first three years (FY 1988-FY 1990) the GEOMAP component focussed on developing systematic production of geologic-map information. The FY 1991 plan retains this programmatic emphasis on baseline geologic maps, but broadens the scope of mapping activities in order to encourage the coordinated development of integrated geophysical and geochemical data bases. The geochemical mapping will provide baseline data needed to carry-out environmental monitoring of toxic elements in the natural geochemical systems and the geophysical mapping will provide the third dimension of subsurface structures.

Geologic, geophysical, and geochemical mapping and companion investigations are conducted under two elements: Regional Study Unit Investigations and Topical Geologic Mapping Investigations. These two elements require companion investigations of geochronology, paleontology, and geologic processes that (1) determine the age, composition, and origin of geologic materials and (2) clarify the character and existence of geologic map units and structures whose existence otherwise might not be suspected on the basis of conventional field methods. This multidisciplinary support is provided by the Geochronology and Geologic Processes component of the program.

Regional Study Unit Investigations: These are team investigations that are comprehensive, sustained scientific efforts (3 to 5 years, typically) mounted in high priority regions as large or larger than a 1:100,000-scale quadrangle (about 35 x 50 miles, or about 1,950 square miles). The teams include geologic mappers, paleontologists, geophysicists, geochronologists, and geochemists working together to produce integrated multidisciplinary products and information. This team approach to solving geologic problems brings a variety of different perspectives to bear on the problem.

The three study units presently underway (see Figure G-6) serve as centerpiece projects for the NGM program. In addition, one study unit will be initiated in FY 1990 as described below:

o The Southern California Study Unit (San Bernardino, Riverside, and Los Angeles Counties): This study unit was not fully implemented in FY 1989 because of funding reductions and absorptions of increased fixed costs and is therefore identified as a new start in FY 1990. The study unit is comprised of eight 1:100,000-scale quadrangles that include urbanized regions of the eastern Transverse Ranges, northern Peninsular Ranges, and the eastern Los Angeles Basin. Within the study unit area are all major fault types that form the neotectonic framework of southern California. A regional geologic map-based analysis of the distribution and history of these fault complexes will provide a framework for evaluating seismic potential and earthquake hazards. These investigations are supportive of and coordinated with studies sponsored by the USGS National Earthquake Hazards Reduction Program and the Southern California Earthquake Center consortium. The study unit is in a region of existing and futurepopulation growth; at present, San Bernardino and Riverside are the two fastest growing counties in California.

Recent program accomplishments under the Study Unit activity include:

o Washington West Study Unit (WWSU) (Northern Virginia and adjacent parts of West Virginia and Maryland): In the WWSU, detailed mapping of both bedrock and surficial geology at 1:12,000 scale of hillslopes in Loudoun County, Virginia, has produced a map base that will aid county planners as well as satisfy more regional goals of the NGM study unit. This work was partially funded through a cooperative agreement between the USGS and the Loudoun County Government. In addition, a detailed airborne geophysical survey was completed in the Warrenton 15-minute quadrangle to aid in delineating bedrock structural style in a complex portion of the Virginia Blue Ridge.

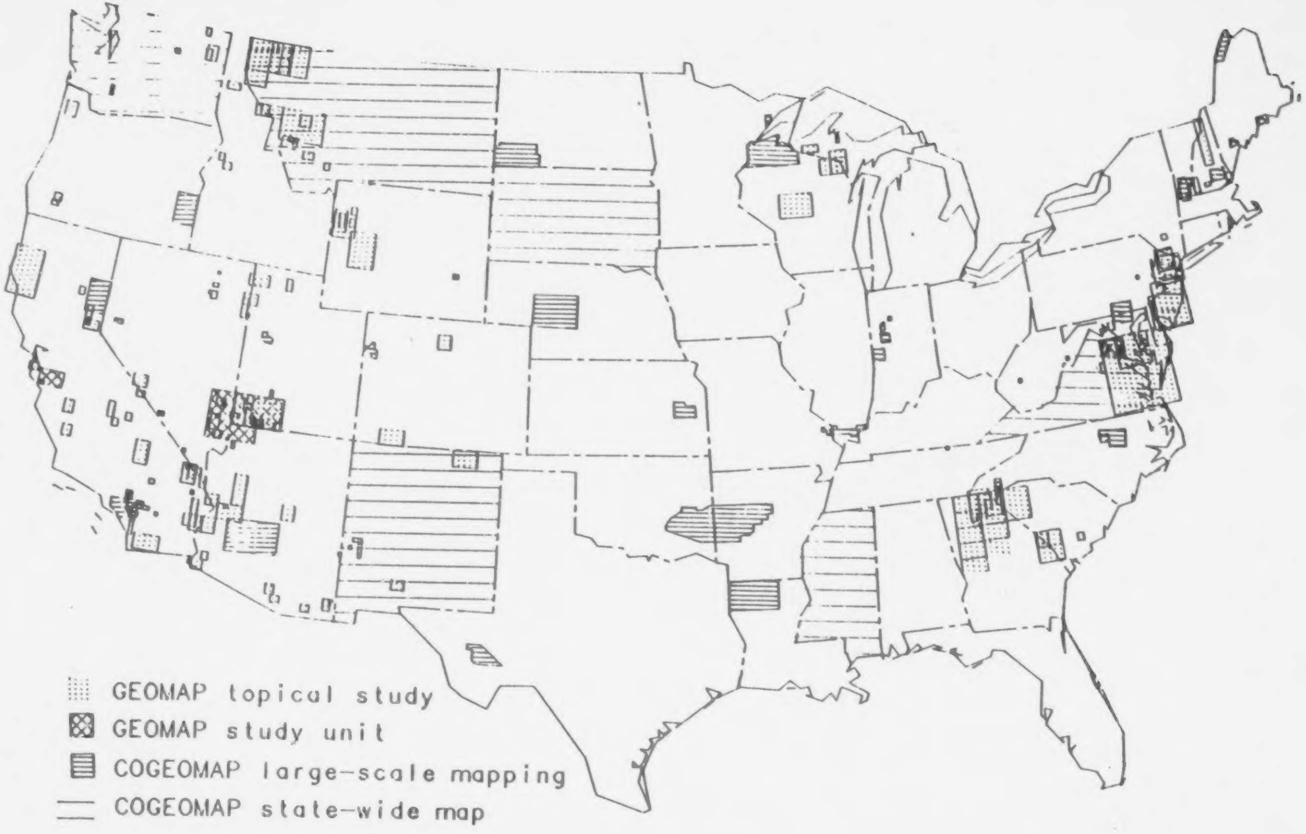

GEOMAP topical study
GEOMAP study unit
COGEOMAP large-scale mapping
COGEOMAP state-wide map

Figure G-6.--Map showing areas of National Geologic Mapping Program activity, FY 1989.

- **Basin and Range-Colorado Plateau (BARCO) Study Unit (southwestern Utah, northwestern Arizona, and southeastern Nevada): Newly released open-file geologic maps of 20 quadrangles illustrate the detailed structure and stratigraphy of several parts of the BARCO study area. Detailed mapping of a major shear zone with recent fissure openings adds information essential to understanding the current stress fields in this active earthquake area. The first of eight 1:100,000-scale geologic maps, the Kanab, Utah quadrangle, is due for release in 1990, documenting the geology of the transition to the Colorado Plateau.**

  -- New regional gravity and aeromagnetic maps for the entire study unit reveal the regional structure of the fault-block mountain ranges and intervening alluvial filled valleys of the Basin and Range and mark the edge of the Colorado Plateau, thereby permitting better definition of this major crustal boundary. Newly acquired private-sector magnetic data demonstrates the alignment of buried igneous rock masses and potential mineral deposits on the Iron Axis in Nevada and Utah.

- San Jose Study Unit (California): In the San Jose Study Unit, detailed mapping and recompilation of earlier work at 1:24,000 scale has focused on the western portion of the area. Surficial geologic maps in the San Jose area, put in historical perspective, document the effect of man on the geomorphology of this area. This mapping will help local government agencies address environmental planning issues. Bedrock geologic mapping, structural, and paleontologic studies in the southwestern part of the study unit (Laurel and Loma Prieta areas) covered the epicentral areas of the major 1989 earthquake and documents the tectonic history of the San Andreas and related faults needed to identify and mitigate ground failure hazards.

Topical Geologic-Mapping Investigations: These are small-scale scientific efforts of short duration (1 to 3 years, typically) that arise on demand either because they are required to address a specific national need or because they represent a geologic process or problem whose solution is of sufficient national concern to warrant a basic-research commitment. Topical geologic-mapping investigations require interdisciplinary support, but the range of disciplines is less comprehensive and the overall research effort is of shorter duration than for study unit investigations. The locations of these mapping projects are shown in Figure G-6.

Recent program accomplishments under the topical geologic-mapping activity include:

- Several geologic-mapping studies were completed in the Appalachian mountains of the eastern United States. Mapping of the Atlanta, Georgia, 1:100,000-scale quadrangle has provided the geologic data base for a GIS of the Atlanta metropolitan area. The map (based on detailed geologic mapping at 1:24,000 scale) outlines a tectonic framework that may be extended to other parts of the southern Appalachians. Compilation of the Radford, Virginia, 1:100,000-scale quadrangle for both bedrock and surficial geology not only documents the structural framework of this part of the Appalachian Valley and Ridge Province, but shows the special relations of surficial units to that bedrock. This map combination is extremely useful in estimating slope stability and potential landslide hazards, and serves as an example of the use of general-purpose geologic maps. Completion of a geologic, geochemical, and geophysical map folio of the Hartford, Connecticut, Mesozoic basin marks the beginning of a series of folios at 1:125,000 (or 1:100,000) scale that will cover the 12 exposed Mesozoic basins in the eastern United States. Cosponsored by the Strategic and Critical Minerals Program, these folios, together with the many published reports from this project, will constitute a comprehensive understanding of the mineral and hydrocarbon potential, hydrogeologic character, and structural and stratigraphic framework of this important geologic province in urbanized areas of the eastern United States. Detailed geologic mapping in the Green Mountains of Vermont has begun to delineate their tectonic framework that contrasts sharply to the Berkshire mountains just to the south in Massachusetts. This difference is important in evaluating fault zones, mineralized areas, and geomorphology. The detailed mapping is being recompiled at 1:100,000 scale and will serve as one of the geologic map bases for the new State geologic map of Vermont to be published at that scale.

o A block of 16 detailed geologic quadrangle maps in northern Colorado was published in 1988-89. The maps provide the framework for more than 1,000 sq. mi. of complex Precambrian basement uplifted to form the Front Range 60 to 70 million years ago and for the deformed sedimentary rocks at the eastern mountain front, which overlie the basement and form the western margin of the petroleum-bearing Denver Basin. These maps will have long-term applications in the future development of the Front Range urban corridor in Colorado and Wyoming, in the management of water and mineral resources in the region, and in recognition of geologic hazards.

o A new geologic map of the Latir volcanic field and surrounding area in northern New Mexico (Miscellaneous Investigations Series Map I-1907) illustrates in detail the relations of a 15-mile-wide explosion caldera whose eroded roots are now the exposed host rocks for important molybdenum deposits. This modern geologic interpretation is an example of the interrelation of several specialties, namely volcanology, structural geology, metamorphic and igneous petrology, and economic geology, essential to providing a comprehensive model for mineral exploration for many similar areas in the western United States.

2. Federal/State Cooperative Geologic Mapping (COGEOMAP): The COGEOMAP component of the NGM program sponsors cooperatively funded projects that produce geologic maps in areas of mutual interest to the USGS and State Geological Surveys (see Figure G-6). A secondary objective is to compile Statewide digital geophysical maps. Although individual projects generally are constrained by the boundaries of participating States, the COGEOMAP component augments the national geologic map data base and contributes to the foundation used to address geologic problems that transcend State boundaries. COGEOMAP thus provides a means to respond more effectively to Federal and State earth-science problems.

Maps produced under COGEOMAP are used for specific applied studies directed at evaluating geologic hazards, assessing mineral and energy resources, and providing a basis for land use decisions. Because terrane, resources, and geologic problems of the States vary greatly, projects are different from State to State.

Specific types of projects that are supported under the COGEOMAP component include:

- o Intermediate and large scale (1:100,000 or larger) geologic mapping.
- o Assistance in planning and preparing geologic map compilations of an entire State.
- o Geologic mapping to interpret major geophysical features important for regional scale studies.
- o Through the use and expansion of existing digital data bases, prepare State geophysical maps at scales compatible with State geologic maps.
- o Geologic mapping in urban areas to understand and plan for water resources, waste disposal, and facilities siting.

Recent program accomplishments under the COGEOMAP component include:

- o The table below shows States that have finished projects and the numbers of projects completed since the initiation of COGEOMAP:

Alabama	1	North Carolina	1
Alaska	3	Oregon	4
Arizona	1	Tennessee	1
Connecticut	1	Virginia/Maryland	1
Maine	2	West Virginia	1
Montana	1	Wisconsin	1
Nebraska	1	Wyoming	4
Nevada	2		

- o New Jersey: The goal of the USGS New Jersey Geological Survey COGEOMAP project is to produce both bedrock and surficial geologic maps (three each) of the State at a scale of 1:100,000. The southern surficial quadrangle and the central bedrock quadrangle have been compiled and are now in the review stage. Byproducts of this mapping project are a series of detailed geologic maps (1:24,000 scale) that serve as the primary source for site-specific geologic-map data.
- o Mississippi: The Mississippi Bureau of Geology, with cosponsorship of COGEOMAP, convened a conference in 1989 in Jackson, Mississippi, to formulate a long-term cooperative geologic mapping program for the State with the goal of producing a new State geologic map and a comprehensive geologic-map data base for Mississippi. Representatives from 15 State and Federal agencies attended to address the setting of mapping priorities and cooperative strategy. A circular developed as a result of the conference serves as the basic planning document.
- o Wisconsin: Geophysical and geochemical support have greatly increased the accuracy and quality of the Superior quadrangle (1:250,000 scale) bedrock geologic map in northern Wisconsin. The area of the Superior quadrangle is mostly mantled by a thick layer of glacial deposits which obscure the bedrock. Field mapping is limited to available outcrops and drillholes, both of which are sparse. Aeromagnetic and gravity surveys and

geochemical studies are critical to producing an accurate and useful bedrock geologic map in such an area.

- Texas: A combination of detailed field mapping (Texas Bureau of Economic Geology) and high resolution geochronology (USGS) has greatly refined the stratigraphy of silicic volcanic units in the Davis Mountains, Trans-Pecos volcanic field, Texas. This work has revealed a volcanic stratigraphy significantly different and far more complex than that depicted on the Marfa and Fort Stockton quadrangles of the Geologic Atlas of Texas. This work, together with similar studies ongoing in other silicic volcanic fields in the southwestern United States and Mexico, will refine regional models of volcanic processes.

- Washington: The Division of Geology and Earth Resources is publishing a new geologic map of the State in four quadrants with COGEOMAP support for the compilation of four 1:100,000-scale quadrangles in the north central part of the State. The geologic map of the Sauk River 1:100,000-scale quadrangle was released in 1988 as a contribution to the State's new map (1:250,000 scale). In the State's description, "the maps will be highly useful products for mineral exploration (and) broadscale evaluation of geologic hazards...We expect the geologic maps at both scales to exert a positive influence on earth resource exploration in the state, with resulting economic development."

The table in Figure G-7 shows funding for FY 1989, FY 1990, and estimated for FY 1991.

3. Geochronology and Geologic Processes: This component provides support for basic research into Earth materials and Earth history. The investigations serve two functions: (1) they support the GEOMAP and COGEOMAP components by providing a variety of data that are essential for the map to have full interpretive value; and (2) they develop analytical techniques and provide basic research data and theory on a variety of geologic processes and problems that are critical to most USGS missions.

The research investigations fall into four main categories:

- Geochronologic and isotopic studies: These studies provide radiometric age dates and fingerprint the chemical character of geologic materials. Numerical rock ages can be determined using suitable radioactive elements present in rocks and minerals or by using the paleomagnetic signature of rocks. Trace element signatures are identified by analyzing stable isotopes of carbon, oxygen, strontium, potassium, calcium, and rare earth elements. Accurate dating of rocks and deciphering their trace element signatures is critical to understanding the natural processes by which they formed and to correlate geologic map units in one area with those nearby or in other parts of the world.

FIGURE G-7.--FEDERAL/STATE COOPERATIVE GEOLOGIC MAPPING
. Estimates of State Offerings for FY-1991
(thousands of dollars)

State	FY-1989		FY-1990		Estimated FY-1991	
	State funds Offered	USGS funds available	State funds Offered	USGS funds available	State funds Offered	USGS funds potentially avail.
Alabama	39.2	38.8	0.0	0.0	0	0
Alaska	30.0	0.0	30.0	37.6	50	40
Arizona	116.2	91.4	133.4	97.3	150	100
Arkansas	50.3	31.1	43.6	28.4	60	30
California	124.2	72.1	142.3	83.0	150	85
Colorado	15.0	16.7	35.0	0.0	40	20
Florida	30.0	0.0	115.0	0.0	120	60
Hawaii	0.0	0.0	40.0	48.5	30	25
Idaho	20.2	11.1	62.3	27.8	75	30
Illinois	105.0	82.7	148.7	93.2	160	95
Indiana	23.4	22.2	52.7	26.7	60	30
Kansas	50.0	47.2	90.0	93.5	100	90
Kentucky	0.0	0.0	51.6	0.0	60	20
Lousiana	14.5	16.2	23.6	1.2	35	10
Maine	24.4	13.3	24.9	15.6	30	15
Maryland	0.0	18.9	15.5	16.7	20	20
Michigan	25.8	11.1	10.0	11.1	15	15
Minnesota	20.0	22.2	20.1	11.1	30	15
Mississippi	3.5	5.8	37.3	20.9	60	20
Missouri	22.5	16.7	45.0	38.9	75	40
Montana	185.8	99.3	211.8	74.0	210	75
Nebraska	29.4	31.6	197.1	33.3	230	35
Nevada	97.9	11.1	97.1	11.1	120	25
New Hampshire	20.0	34.6	20.0	52.9	55	30

FEDERAL/STATE COOPERATIVE GEOLOGIC MAPPING

Estimates of State Offerings for FY-1991

(thousands of dollars)

State	FY-1989		FY-1990		Estimated FY-1991	
	State funds Offered	USGS funds available	State funds Offered	USGS funds available	State funds Offered	USGS funds potentially avail.
New Jersey	443.5	308.0	439.7	276.1	375	175
New Mexico	20.0	111.1	30.9	17.3	40	20
North Carolina	65.0	49.3	130.8	63.0	150	60
North Dakota	60.8	10.4	27.8	14.5	40	15
Ohio	48.7	0.0	326.9	37.6	300	40
Oklahoma	109.2	104.8	111.5	102.3	125	90
Oregon	67.2	61.4	122.6	81.8	120	25
Pennsylvania	86.3	26.7	50.1	26.7	55	30
Rhode Island	21.5	0.0	0.0	0.0	20	10
South Dakota	43.4	0.0	28.6	32.7	35	30
Tennessee	30.0	0.0	30.0	0.0	40	20
Texas	58.5	55.2	94.2	88.8	100	90
Utah	22.5	22.2	27.1	30.0	30	30
Vermont	47.5	22.2	20.0	24.5	30	25
Virginia	20.0	22.2	30.0	16.7	25	20
Washington	130.0	87.4	570.3	85.9	400	90
West Virginia	66.2	46.2	95.2	31.7	120	30
Wisconsin	71.0	27.8	60.0	55.6	70	55
Wyoming	54.0	0.0	50.0	0.0	40	20
TOTALS	2512.6	*1649.0	3892.7	*1808.0	4050	*1800

* Does not include geophysical and related map projects funded at approximately $200K per year.

- Paleontologic and stratigraphic studies: The description and taxonomic classification of fossil plants and animals allow their position in evolutionary sequences to be determined, which in turn allows a relative age to be assigned to fossil-bearing sedimentary rocks whose age otherwise could not be determined. In addition, comparison of fossil plants and animals with their living counterparts, together with analysis of the rock and sediment surrounding the fossils, provides important clues about the paleoenvironment, paleoecology, bottom conditions, depth, temperature, salinity, and paleoclimatic conditions under which the fossils lived and under which the sedimentary materials accumulated. These factors must be determined in order to establish the age and three-dimensional framework of sedimentary geologic map units.

- Geologic process and synthesis studies: In order for geologic mapping to determine the geologic architecture of an area, the geologic processes that formed the rocks, surficial materials, and geologic structures must be adequately understood. This enhanced analysis provides a conceptual framework that allows geologic map units to be identified, characterized, and geometrically related to each other more accurately. Not only does the geologic map have greater interpretive value when mapping studies and process studies are combined, but this analytical combination allows the overall geologic framework and history of an area or region to be synthesized. Such comprehensive studies are essential because the geologic syntheses that emerge from them commonly establish a fundamental paradigm that not only influences the way in which future studies are conducted but also opens up new approaches for identifying and solving geologic problems.

- Geophysical and Geochemical Investigations: These studies generate spatially based data sets that characterize the geophysical and geochemical signatures of broad regional tracts. These activities are coordinated with geologic-mapping projects, and respond to identified requirements for integrated earth-science data sets. These investigations lead to the development of baseline geophysical and geochemical data bases.

  Geophysical mapping. Research emphasis for geophysical mapping projects is two fold: (1) remote sensing and other techniques that identify the distribution and physical character of geologic materials and analyze landscape geomorphology; and (2) airborne and ground-based potential field techniques (gravimetric, magnetic, radiometric, and electromagnetic) that characterize the distribution and physical characteristics of geologic materials and delineate the three-dimensional subsurface configuration of rock bodies and geologic structures.

  Geochemical mapping. Research emphasis for geochemical mapping projects is on the recognition of stable and anomalous geochemical signatures for surficial and bedrock terranes, with special emphasis on how natural geochemical systems and patterns have been disturbed by human activities. The analyses provide information on the natural background of toxic elements such as selenium, cadmium, arsenic, and mercury needed for environmental monitoring.

Recent program accomplishments within the Geochronology and Geologic Processes component include:

Geochronologic and isotopic investigations:

- A meteorite impact crater, known as the Manson impact structure, is located in the shallow subsurface of north-central Iowa. Dating of shocked feldspar from the crystalline central uplift of the crater indicates the impact occurred 65.7 ± 1.0 million years ago, coincident, with the known age of the Cretaceous/Tertiary (K/T) boundary in geologic time. The type of shocked mineral and rock fragments, together with their size distribution and concentration, in the K/T boundary claystone worldwide is most consistent with a meteorite impact in the interior of the North American continent. These data together suggest the Manson crater is a viable candidate for the K/T boundary impact event thought to have produced mass extinctions, including the dinosaurs.

- Minerals commonly have a complicated crystallization history that reflects their complex geologic history. This often is evidenced by a concentric zoning of the mineral grain reflecting an original "core" and subsequent "overgrowths." Air abrasion techniques have been developed to selectively remove the overgrowths and collect them for geochronologic and isotopic characterization, thus gleaning a polygenetic history from a single mineral rather than having to examine many minerals in many different rocks. This technique has already been used in support of geologic mapping in complex metamorphic areas where new growth of minerals related to remetamorphism is common. It has also been applied to ore deposits that have precipitated from mineralizing brines during regional fluid migration events. The timing, temperature, and source of brine formation and migration have been measured and have proven to be a valuable set of characteristics in locating potential areas for similar deposits.

- Knowledge of the timing, direction, and amount of displacement on faults is important both to geologic reconstruction and to hazards mitigation. A paleomagnetic study of pre-Cretaceous rock sequences, separated by a major fault in the northern California Coast Ranges, suggest very little latitudinal (strike slip) displacement has occurred on the fault in the last 100 million years. This is surprising because plate motions from then to present in the area have been obliquely convergent, favoring large-scale strike slip displacement along major faults much like the San Andreas. Paleomagnetic studies of this type are improving understanding of complex fault systems in seismically active areas.

Paleontologic investigations:

- Synthesis of Paleocene microfossil assemblages from cores of 18 stratigraphic test holes has shown that nearly continuous marine sedimentation occurred along the New Jersey coast from 66 million years ago to about 45 millions years ago. The study has also located shifting depocenters caused by local tectonic events and provides improved information on the extent and thickness of subsurface units that are important for ground water resources.

- The findings from comprehensive studies of the biostratigraphy of Carboniferous coal bearing units in Virginia and West Virginia were published recently as USGS Professional Papers 1479 and 1486. These studies provided a better definition of temporal and spatial distributions of coal deposits in the central and northern Appalachian basin, allowing a refinement of the estimated coal resources in this area.

- A high resolution biostratigraphic and paleoenvironmental analysis has documented the present elevation and location of shorelines in the eastern Gulf Coastal plain that are 35 to 60 million years old. These results are a critical test of the magnitude and timing of global sea level changes built into global sea level curve models currently used to interpret major sedimentary features of continental margins.

Geologic process and geologic synthesis investigations:

- The Quebec-Maine-Gulf of Maine Global Geosciences Transect has applied digital geographic information systems (GIS) technology to synthesize geologic, geophysical, and geographic information into three-dimensional models of the crust to Moho depths (30 to 40 km) along a transect 880 km long and 100 km wide that extends across the Appalachians from the continental interior near Quebec City to the Atlantic Ocean basin south of Georges Bank. This transect, cosponsored by the Deep Continental Studies Program, has produced a detailed and thoroughly documented synthesis of the processes that formed the principal structures within the northern Appalachians over 250 million years ago and gives new evidence for deformation and reformation of the deep crust during the continental extension that lead to rupture and formation of the Atlantic ocean about 170 million years ago.

- USGS Professional Paper 1475 synthesizes the geologic history of the southernmost Appalachians. This comprehensive work combines geologic mapping and isotopic, geochemical, petrologic, geochronologic, and structural studies over an area of about 30,000 square miles. More than 60 figures and tables document a tectonic model of stacked thrust sheets that were transported on to the North American continent over 250 million years ago. This model has already fostered many detailed geologic mapping studies of critical areas to test the concepts presented in this report.

- USGS Bulletin 1776 is a compendium of 39 papers stemming from a workshop on "Geology of the Early Mesozoic Basins of Eastern North America" convened by the USGS, May 11-14, 1987 (cosponsored by the Strategic and Critical Minerals Program). Contributors from the USGS, State Geological Surveys, universities, and other government agencies cover the subdisciplines in geology of stratigraphy, sedimentation, paleontology, isotope geology, geochemistry, geophysics, and economic geology. These contributions are organized in sections that together represent the most definitive work to date on this important geologic province.

4. Modernization of Mapping Techniques: The Modernization of Mapping Techniques component applies automated data processing technology to geologic mapping in order (1) to increase the production rate and cost effectiveness of geologic maps and (2) to facilitate the production of derivative special purpose maps by digital integration of geologic map data with other earth science and

geographic data bases. The component supports research and development activities that lead to the application of computer based technologies to all stages of the geologic map production process from the acquisition of geologic map data, through the compilation and analysis of data by Geographic Information Systems (GIS) methods, to final publication. The Mapping Modernization component thus responds to the National Research Council's recommendation that "the USGS ...take whatever steps are necessary to reduce the time required for publication of geologic maps including the broader use of computer technology."

Research and development activities under the Mapping Modernization component are directed toward (1) implementing the prototype Geologic Workstation and (2) developing a compatible interface between the workstation and the rapidly advancing digital map production system.

Recent program accomplishments under the Mapping Modernization Component include:

- The development of the Geologic Workstation reached the prototype stage in FY 1989, providing a digital based environment for the geologist to prepare maps for publication and analyze multiple datasets more effectively without extensive computer training. The project created a public domain software interface enabling the geologist to prepare complex maps with a widely used, commercial GIS software system. The workstation software was installed for use in USGS regional and Alaska centers in FY 1989.

- Digital inventories of geologic mapping provided a mechanism for prioritizing the geologic mapping needs of the Nation. These data bases include:

  (1) Published geologic maps by the USGS, State Geological Surveys, and other geoscience organizations, updated quarterly;

  (2) Currently active geologic mapping projects in the USGS, updated annually;

  (3) Mapping requirements of USGS programs, other Federal agencies, State and local governmental organizations, and the private sector; updated annually.

The following table shows workload for FY 1989, FY 1990, and estimated workload for FY 1991:

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate
Federal Geologic Mapping Projects				
Regional Study Unit Investigations	3	4	4	4
Topical Geol. Mapping Investigations				
1:24,000-1:63,360 scale	25	30	30	28
1:63,361-1:100,000 scale	21	21	21	20
1:100,000-1:250,000 scale	2	1	1	1
COGEOMAP States Participating	34	36	36	42
Geochronology & Geologic Processes Proj.				
Isotopic Studies	25	25	25	25
Paleontological Studies	20	20	20	20
Geophysical & Geochemical Studies	7	7	7	10
Geologic Process and Synthesis Studies	44	35	35	30
Modernization of Mapping and Techniques	5	1	1	1

Deep Continental Studies

The Deep Continental Studies Program conducts fundamental research using continental drilling, geophysical imaging of deep crustal structure, and studies of the physics and chemistry of the Earth's deep crustal materials. Deep Continental Studies addresses critical problems on the origin and evolution of the deep continents and the processes that produce mineral and energy resources and cause geologic hazards.

Objectives:

o To determine the mechanisms of continental deformation and the manner in which strain energy is accumulated through tectonic plate motion and dissipated through crustal warping, fracturing, and faulting.

o To model the heterogeneous structure and composition of the crust and upper mantle and to identify processes in these regions related to the geologic history and evolution of the continents.

o To characterize the roots of hydrothermal magma systems to better understand volcanic geothermal processes in the formation of mineral deposits.

o To understand how continents grow through the accretion of terranes derived from near and distant oceanic and continental sources.

Base Program: Information about the composition, structure, and dynamics of the Earth's crust provides a better understanding of the origin and evolution of the continents and their resources. With the development of the theory of plate tectonics, the earth sciences now have a consistent and comprehensive conceptual framework for interpreting Earth dynamics. In the Earth, forces derived from its internal heat give rise to horizontal movements at the surface of a small number of rigid plates. Within this framework, a better understanding of the processes and structure of the deep continents provides society with solutions to many problems especially those associated with supplies of mineral and energy resources, the disposal of wastes, and the mitigation of earthquake and volcano hazards. There is a large gap in knowledge between the fine detail provided by shallow geologic exploration and the general, large scale knowledge of the deeper portions of continents. It is in these deeper zones where many critical mineral deposits form and where earthquakes and volcanoes originate. The potential for rapid progress in understanding the deeper parts of the continents is particularly strong at this time because of recent technical advances in field instrumentation and data processing equipment. The ability now exists, for example, to measure stress, strain, and geochemical properties in deep drill holes, to build microprocessor based portable digital seismographs for 3-dimensional imaging of the deep crust, to collect high quality seismic reflection and refraction data, and to process it using advanced analytical techniques.

Objectives, significant recent accomplishments, current program activities, and FY 1991 plans for each element of the program are described below.

a. Crustal Transects: The objective of this element is to conduct multidisciplinary studies, called transects, that traverse major geologic features and their boundaries. These transects emphasize the acquisition and interpretation of seismic reflection and refraction data, the verification of seismic models with gravity and magnetic data, geologic mapping, and isotopic, geochemical, and heat flow studies. These data and interpretations define the composition, structure, and deformation mechanisms of subduction zones, accreted oceanic and continental microplates, active continental rifts, and extensional terranes. Ongoing investigations include: 1) The Trans-Alaska Crustal Transect (TACT), a study of the complex geologic structures along the route of the Alaska pipeline and extending offshore across the Pacific and Arctic continental margins. 2) The Pacific Arizona Crustal Experiment (PACE), a transect from the Continental Borderland, across the rifted terrane of the Salton Trough of California, the southern Basin and Range of western Arizona, and the transitional zone of the Colorado Plateau. PACE is part of a collaborative effort between the USGS and the CALCRUST consortium, a group of universities with National Science Foundation support, to study problems of crustal structure in California by seismic reflection profiling. And, 3) the Canadian-American Border Continental Transect (CABCT), a cooperative project between the USGS and the Geological Survey of Canada, to study the deep structure and evolution of the various geologic provinces along the border. This project is an outgrowth of the Quebec-Maine transect and the Great Lakes seismic reflection survey, both of which were conducted with Canadian colleagues.

In FY 1991, the level of effort on the TACT and PACE transects will be reduced as a new transect in the Pacific Northwest begins. The Pacific Northwest Transect (PNT) will extend from offshore across Washington and Oregon, traversing the Juan de Fuca plate from the spreading center, across the subduction zone, to the east side of the Cascade Range. The transect will contribute to CABCT and will provide information about deep crustal structure in support of several USGS programs that have objectives in the area.

Recent accomplishments in this element include:

- TACT conducted geologic studies across the southern half of the Brooks Range and magnetotelluric soundings (an electromagnetic method of measuring natural electric and magnetic fields) between the Yukon River and the North Slope. Synthesis of data north of the Denali fault in the Alaska Range indicates that the crystalline rocks of the Yukon Tanana terrane form a thin (3 to 5 km) layer overlying a thick (20 km) unit of highly conductive rocks that are interpreted to be underthrust black shales. Analysis of the 1,100 km of marine seismic reflection data from Prince William Sound and the northern Gulf of Alaska reveals strong reflections within the crust and from the subducted Pacific plate; this is the source region for the great 1964 earthquake, the second largest earthquake in the world during this century.

- PACE conducted a major seismic refraction experiment across the margin of the Colorado Plateau toward the Four Corners (the location where the State lines of Utah, Colorado, Arizona, and New Mexico meet). Evidence is building to support the concept that voluminous magma underplated the mid-crust beneath the metamorphic core complexes during tectonic extension along the California/Arizona border. An aeromagnetic survey of 25,000 flightline miles over the Peninsular Ranges batholith in southern California revealed the structure of the east-dipping crustal boundary that separates the magnetic west half from the nonmagnetic east half of the batholith.

- 4,100 km of marine gravity data were acquired in Lake Huron which will contribute to a new gravity map of the area. Seismic refraction data collected during the earlier seismic reflection survey of the Great Lakes revealed the structure of the upper crust.

Program activities in this element in FY 1990 and FY 1991 include:

- TACT will conduct a major seismic refraction survey and continue geologic studies across the Brooks Range in northern Alaska and a magnetotelluric survey across the Koyukuk Basin in FY 1990. These studies will shed light on the origin and history of the Brooks Range and the Koyukuk Basin area. Processing and analysis will continue on the seismic reflection and refraction data collected in FY 1988 in the Gulf of Alaska. In FY 1991, TACT will move toward data synthesis as the data gathering phase of the project winds down. Integration of data and interpretation will be emphasized, and interpretation of the FY 1990 seismic refraction and magnetotelluric surveys will continue.

- PACE will interpret seismic refraction and teleseismic data from the Arizona transition zone and Colorado Plateau to investigate the deep crustal structure across the zone in FY 1990, and analysis will continue on magnetotelluric data from southeastern California to the Colorado Plateau. In FY 1991, PACE efforts will focus on interpretation of the FY 1989 seismic refraction survey, and emphasis will be on integration and interpretation of data.

- CABCT will interpret marine gravity data from Lake Huron in FY 1990, and analysis will proceed on the Lake Huron gravity data in FY 1991.

- Plans will be prepared for the Pacific Northwest Transect in FY 1990, and preliminary surveys will be initiated in FY 1991.

b. Continental Scientific Drilling: The objective of this element is to study the structure and processes of the Earth's continental crust by drilling. The drill is the only means to directly sample deep Earth materials and to measure physical properties at depth. Drilling has the potential for answering major questions regarding the origin of continents, the nature of the boundary between oceans and continents, and the occurrence of natural resources and hazards. Samples collected during drilling provide the "ground truth" necessary to calibrate and interpret subsurface geophysical data. The USGS participates in the Continental Scientific Drilling Program through pre-drilling geophysical and geological site studies and scientific investigations associated with drilling projects funded by other government agencies. USGS activities in Continental Scientific Drilling are coordinated with the National Science Foundation and the Department of Energy through the Interagency Coordinating Group.

Recent accomplishments in this element include:

- In May 1989, the Interagency Coordinating Group submitted a report to Congress as stipulated in P.L. 100-441, the Continental Scientific Drilling and Exploration Act. The report describes agency plans for implementing a drilling program. A Council will be established to provide overall guidance to the drilling program.

- Heat flow and geochemical monitoring of the Cajon Pass, California, drillhole continued. The most significant result from the project is the determination of a stress direction normal to the San Andreas fault, which implies a weak fault and accounts for compressional structural features subparallel with the fault zone.

- Geological and geophysical site studies continued in the Creede, Colorado, mining district preparatory to possible shallow and intermediate depth drilling by the National Science Foundation.

- A comprehensive scientific plan, integrating proposals from USGS, DOE, and 13 universities, has been prepared for a program of shallow scientific drilling and experimentation at Katmai volcano in Alaska. National Park Service approval based on an environmental impact statement will be required before any drilling can be done, but pre-drilling field work continues. Drilling of the volcano and nearby sites in the Valley of Ten Thousand Smokes would provide direct observation of a large, young igneous system. Drilling costs would be paid by DOE. USGS and NSF sponsored scientists would carry out research in the drillholes.

Program activities in this element in FY 1990 and FY 1991 include the following activities:

- o Drilling at Long Valley, California, funded by the Magma Energy Program of DOE, which began in August 1989, is targeted for 2,500 feet during the first phase. Casing will be set to that depth, then a small diameter hole will be drilled to provide an uncased hole for open hole experiments during FY 1990. The second phase of drilling in 1990 will deepen the hole and provide an opportunity for further experiments in FY 1990 and FY 1991.

- o Geological and geophysical studies will continue in both years at Creede, Colorado, to help determine the structural, sedimentological, and mineralization history of the region and to aid in site selection for a future drillhole.

- o Geological and geophysical studies will continue at Katmai volcano and the Valley of Ten Thousand Smokes in Alaska in both years to determine the nature of the vent that erupted in 1912 in support of the proposal for shallow drilling.

- o Analysis of samples from deep drillholes in the USSR began in FY 1990 at USGS laboratories under a joint agreement with the USSR Ministry of Geology.

- o USGS, NSF, and DOE plan to initiate in FY 1991 a coordinated program of drilling shallow and possibly intermediate depth holes, and to use holes drilled by other organizations.

c. Physics and Chemistry of Deep Continental Materials: The objective of this element is to investigate deep crustal and upper mantle continental rocks to determine their petrologic, isotopic, and structural character. Such rocks must be studied to ensure accurate interpretations of geophysical data and to address critical questions such as the nature of deep crustal seismic reflectors, whether or not the lower crust and upper mantle are layered and uniform or irregular and heterogeneous, the nature of the boundary between the crust and mantle, and the rock types and structures present in different tectonic and magmatic settings. The physical and chemical properties of rocks depend upon the compositions and properties of their constituent minerals plus the nature of grain boundaries, pore fluids, pore pressures, and fluid phases. Investigations are supported by laboratory studies of rock physics and chemistry, including rock mechanics, physical property measurements, and experimental petrology, and by field studies of deep rocks, including collection and analysis of xenoliths (rocks from deep in the earth brought to the surface in volcanic eruptions) and field studies of exposed deep terranes. Projects in this element tie together the information obtained on deep structures revealed by seismic investigations with the structure, physical conditions, and materials measured and sampled by deep drilling.

Recent accomplishments in this element include:

- Geochemical and rock mechanics studies show that trace concentrations of hydrous (water containing) minerals have a significant effect of reducing the frictional strength of some rocks, thereby making them more susceptible tc fracture.
- Analysis of xenoliths from the lower crust in Montana indicates that rocks in the lower crust are denser and have higher seismic wave velocities than those interpreted from seismic refraction surveys. These laboratory results will help calibrate geophysical data.

Program activities in this element in FY 1990 and FY 1991 include:

- Conducting experiments on melting, crystallization, and metamorphism of granitic rocks.
- Studying xenoliths and continuing multidisciplinary studies relating the nature of lower crust and upper mantle rock compositions to geophysical studies along crustal transects.
- Studying rare subcrustal rocks from the Ivrea zone in Italy to determine the history of stress and strain, age, and lithospheric evolution of such rocks.
- Continuing work on rocks of the lower crust and upper mantle to address problems of the nature of the crust/mantle boundary, the lithology of crustal reflectors, the evolution of rocks in the lower crust and upper mantle, and the generation of magma bodies.
- Continuing investigations of exposed deep continental terranes.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate
Transect Studies				
Seismic reflection and refraction surveys	8	6	6	6
Geologic Studies	9	9	9	9
Geophysical Studies	7	7	7	7
Heat Flow Studies	1	1	1	1
Drillhole studies for site analyses and to make downhole measurements and sample analyses	2	2	2	2
Drill core repository and curatorial projects	1	1	1	1
Studies of the physics and chemistry of deep continental materials	3	5	5	5

Geomagnetism

Objectives:

- To perform geomagnetic measurements to infer the magnetic properties of the Earth's interior and the region surrounding the Earth.
- To conduct research on secular variation, conductivity of the crust and mantle, short and long wavelength magnetic anomalies, ionospheric and magnetospheric sources, and methods to improve charting of the magnetic field.
- To provide global real time magnetic indices to the military, to satellite operators, and to the general scientific community.
- To compile and publish periodic revisions of the U.S. and world magnetic charts and to disseminate detailed magnetic information to the public and to World Data Centers.
- To provide ground level base data control for satellite surveys conducted by the Department of Defense, NOAA, NASA and other Federal agencies.

Base Program: The Geological Survey operates 11 magnetic observatories, makes repeat magnetic field surveys at selected field sites to determine magnetic secular change rates, and works with NASA and the Department of Defense to obtain new satellite data to help with the worldwide data collection program. The observatories are located in Fredericksburg, Virginia; San Juan, Puerto Rico; Barrow, College and Sitka, Alaska; Guam; Tucson, Arizona; Boulder, Colorado; Fresno, California; Newport, Washington; and Del Rio, Texas. Data from these observatories, from the NOAA observatory at Hawaii, a cooperative USGS U.S. Navy observatory near Bay St. Louis, Mississippi, a cooperative USGS Oklahoma Geological Survey operated observatory at Tulsa, Oklahoma, and from about 250 field sites throughout the United States where measurements are taken at periodic intervals, are necessary to the program's charting and data dissemination responsibilities. A number of other Federal agencies depend on the use of USGS geomagnetic data to meet legislated missions.

Values of the magnetic declination resulting from analyses are used on numerous charts and maps produced by various Federal agencies, including the topographic maps produced by the Geological Survey and the navigational charts produced by the National Oceanic and Atmospheric Administration, various military agencies, and the Federal Aviation Administration. These data are also used by surveyors to retrace old boundaries and to settle court disputes, for prediction of atmospheric conditions that affect ballistic missile flight and disrupt satellite data transmissions, and for determination of the altitude of many spacecraft. Within the Geological Survey, the basic geomagnetic data provide the basis for interpretation of aeromagnetic anomaly maps used in exploration for fossil fuels, geothermal energy and minerals, and in studies of geologic structures associated with earthquake and volcano hazards.

Recent accomplishments of the Geomagnetism Program include:

- The USGS Geomagnetism Program continues to play a leading role in the updating of the International Geomagnetic Reference Field (IGRF) and in descriptions of its application in exploration geophysics.
- The USGS continues to distribute near real time magnetic activity indices in cooperation with the British Geological Survey by linking U.S. and British observatories by computer and satellite. The USGS, British Geological Survey, Canadian Geological Survey, and French Institute de Physique du Globe have initiated a new program, INTERMAGNET, to establish near real time global data exchange and dissemination involving 200 observatories.
- Magnetic declination charts for the United States and the world will be completed and published based on the 1990 International Geomagnetic Reference field.
- Magnetic charts of horizontal intensity, vertical intensity, inclination, and total field for the United States and the world are being compiled; publication will take place in 1995.
- Models of global atmospheric electric currents responsible for daily field variations have been produced to determine the deep subcontinental earth conductivity between 150 and 600 km. Improved conductivity knowledge advances our abilities to define deep geologic structure and material content.
- Established a new computer service providing magnetic data to the general scientific community and general public. Data is provided over a commercial telephone network.

Plans for program activities for FY 1990 and FY 1991:

- o Continued operation of 11 USGS geomagnetic observations. The monitoring of real time magnetic indices contributes to the Solar Influence element of the U.S. Global Change Program by providing basic information on changes in the Earth's magnetic field, especially those caused by solar activity (sunspots), thereby permitting research to be carried out on the interactions between the Earth's magnetic field and its atmosphere. Geomagnetic field variations during sunspot cycles disrupt communications.

- o Continued assistance in the maintenance of the NOAA, Oklahoma Geological Survey, and U.S. Navy geomagnetic observatories. Observatory data will be processed and furnished to specialists and to the public.

- o Augmentation of observatory measurements for tracking long term changes in the Earth's magnetic field by making 10 repeat magnetic measurements in Alaska and in the Northern and Central United States.

- o Collection and analysis of geomagnetic data from the Department of Defense; the National Oceanic and Atmospheric Administration, and other Federal agencies to compile and publish new magnetic charts and to update field strength and declination maps.

- o Dissemination of near real time global magnetic activity indices to DOD, other Federal agencies, and other scientific agencies.

- o Continuation of five research projects designed to develop new methods for analysis of magnetic data to predict secular changes in the Earth's magnetic field, to determine if changes are required in the International Geomagnetic Reference Field and develop and extend magnetic methods for studying the crust and mantle of the Earth.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate
Geomagnetic Observatories	11	11	11	11
Repeat Field Surveys	10	10	10	10
Research Projects	5	5	5	5

Climate Change

Objectives: Climate Change Program objectives are (1) to reconstruct the history of Earth's climates on time scales of decades to millions of years; (2) to improve our understanding of the natural variability of climate over time; (3) to understand the environmental consequences of climate change; (4) to develop or improve methods for extracting paleoclimatic information from the geologic record; and (5) to improve our understanding of geologic processes at the Earth's surface that are influenced by climate change.

Base Program: This program is part of an integrated USGS effort that responds to the need for improved earth science information with respect to the issue of

Global Change and is an integral part of the U.S. Global Change Research Program research plan developed by the interagency Committee on Earth Sciences, of the Federal Coordinating Council on Science, Engineering, and Technology, under the Office of Science and Technology Policy. The Climate Change Program was developed in fiscal year 1979 in response to P.L. 95-367, the "National Climate Program Act of 1978." The current program began an expansion in fiscal year 1990 as part of the USGS contribution to the Federal Global Change Research plan being coordinated by the Committee on Earth Sciences (CES) of the Federal Coordinating Council for Science, Engineering, and Technology. The Climate Change Program contributes to four of the seven interdisciplinary science elements defined by the Committee on Earth Sciences: (1) Earth System History, (2) Solid Earth Processes, (3) Climate and the Hydrologic System, and (4) Biogeochemical Dynamics (see Figure G-8). There is growing national and international concern about the prospect of global change, particularly climate change resulting from a wide range of human activities globally. There is a growing recognition that we need to improve our understanding of the complex natural systems that sustain life on Earth, and that understanding the causes and consequences of climate change will be a challenging international scientific undertaking. The Climate Change Program contributes to achieving this understanding by extracting and interpreting evidence of past climates and environments from the geologic record. This program contributes to an improved understanding of natural climate variability on short to long time scales, past rates of climate change, past regional variations in climate change, and environmental consequences of climate change over time scales of decades to millions of years. The program also focuses research efforts on improving understanding of geologic processes at the Earth's surface that are sensitive to climate change, such as erosion and deposition by wind and water, soil formation and degradation, weathering, and other processes.

Paleoclimate Research: One of the major contributions to the Federal Global Change Research effort will be the reconstruction of past climates andenvironments from many regions and over a variety of time scales. This will involve cooperation and scientific exchange of data with academic and Federal government research institutions in the U.S. and a number of foreign nations, such as Canada, the USSR, the People's Republic of China, Japan, and others. Emphasis of the program is to obtain and interpret high quality records of past climates and environments from both marine and terrestrial deposits, with an emphasis on research sites in North America, the North Atlantic, and the North Pacific. Interdisciplinary data sets generated by these research efforts will be archived in digital form and will be made available to researchers in other institutions in the Federal government and in academia.

One key topic under study is part of a major international effort to reconstruct global conditions during unusually warm climatic episodes that occurred during middle to late Pliocene time (see Figure G-3), between about 2.0 to 4.0 million years ago. This synoptic reconstruction will be useful in providing scenarios that can be used to better anticipate the likely environmental consequences of global warming during the next century, if the current predictions generated by General Circulation Models (GCM's) are correct. This research will involve cooperation between USGS and the modeling community based in academia, NASA, NOAA, and the National Center for Atmospheric Research.

Figure G-8.— FEDERAL GLOBAL CHANGE RESEARCH PROGRAM SCIENCE ELEMENTS

(Bold type and underscoring indicates Climate Change Program elements that contribute to the Federal Global Change Research Program)

CLIMATE AND HYDROLOGIC SYSTEMS	BIOGEOCHEMICAL DYNAMICS	ECOLOGICAL SYSTEMS AND DYNAMICS
Role of clouds Ocean circulation and heat flux Land/atmosphere/ocean Water and Energy Coupled climate system & quantitative links **Ocean/atm./cryosphere interactions**	Biosp./atm./ocean fluxes of trace species Atm. processing of trace species **Biogeochemistry** Terrestrial biosphere nutrient and carbon cycling Terrestrial inputs to marine ecosystems	Long term measurements of structure/functions Response to climate and other stresses Interactions between physical and biological processes Models of interactions, feedbacks, responses productivity/resource models

EARTH SYSTEM HISTORY	HUMAN INTERACTIONS
Paleoclimate **Paleoecology** **Atmospheric composition** **Ocean circulation and composition** **Ocean productivity** **Sea level change** **Paleohydrology**	Data base development Models linking: population growth and distribution Energy demands Changes in land use Industrial production
SOLID EARTH PROCESSES	SOLAR INFLUENCES
Coastal erosion **Volcanic processes** **Permafrost and gas hydrates** Ocean-seafloor Heat and energy fluxes **Surficial processes** Crustal motions and sea level	EUV/UV monitoring Atm./solar energy coupling Irradiance (measure/model) Climate/solar Proxy measurements and long-term data base

The USGS research efforts to reconstruct past climates and environments will require expertise in many scientific and technical fields, including paleontology, isotope geology, paleomagnetism, sedimentology, marine geology, drilling technology, and others.

Terrestrial records of past climate will be extracted from geologic deposits accessible in natural exposures and from sediment cores obtained by mechanical drilling operations. Marine records of past climate and oceanographic conditions will be extracted from sediment cores obtained from the world's oceans and from corals which preserve annual variations in water temperatures and environmental conditions.

Recent accomplishments of this program in the reconstruction of past climates include the following:

- Completed analysis of marine sediment cores from the North Atlantic Ocean that indicate that sea surface temperatures were significantly warmer (several degrees C) during the middle Pliocene Epoch (see Figures G-3, G-9) than they are today. These data will contribute to the program's goal of a synoptic reconstruction of global climate during Pliocene warm intervals. The data supports the interpretation that during intervals of warmer global climate, warming is most dramatic at higher latitudes.

- Completed pollen analysis of Miocene and Pliocene age samples from Alaska that indicate that climates in northwest North America between about 16 to 2 million years ago were generally substantially warmer than those of the past about 2 million years. Long term cooling trends over the past 16 million years have caused dramatic changes in the vegetation of interior and northern Alaska. Diverse forests of conifers and temperate broadleaf deciduous trees were gradually replaced by a cold tolerantspecies poor conifer flora with few broadleaf species surviving to the present day in Alaska. Tundra vegetation first began to appear in northern Alaska about 2.4 million years ago.

- Completed field investigations of ancient marine deposits exposed at Carter Creek, North Slope, Alaska. These deposits contain a rich fossil and stratigraphic record of climate and environmental change that spans millions of years. Research on these deposits may prove to be very important for understanding the history of climate from the coastal region of northeastern Alaska in Miocene and Pliocene time (Figure G-3). Work is in progress to refine the age and geologic history of this deposit. This research is being done jointly with scientists from the Geological Survey of Canada.

Polar Climate Research: The Climate Change Program activities that focus on polar regions will include three topics in FY 1990. These are: (1) glacier monitoring and research; (2) permafrost temperature monitoring and research; and (3) polar climate history.

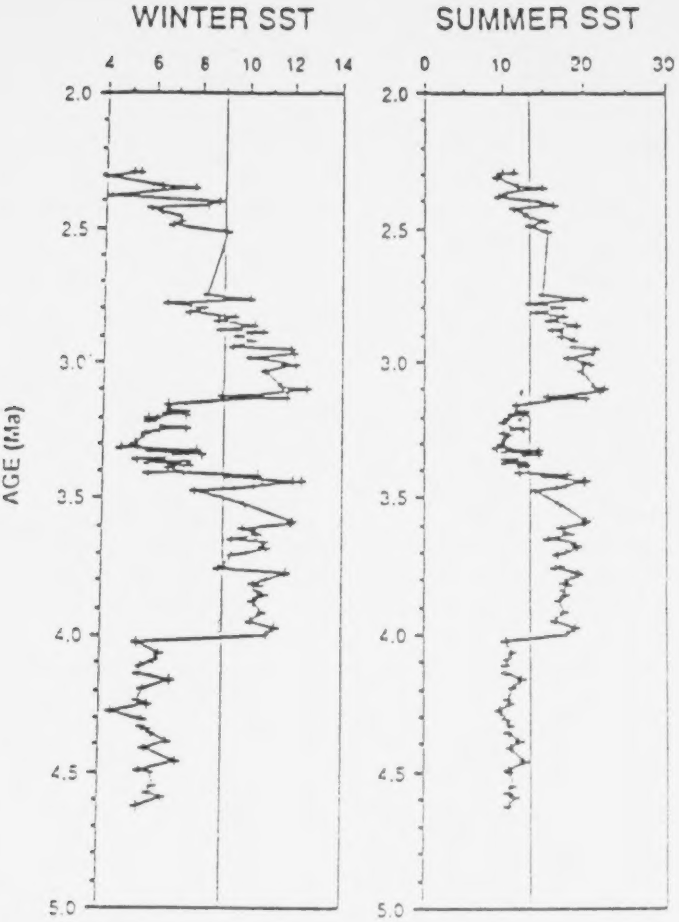


Figure G-9.--Past winter and summer sea surface temperature (SST) estimates shown in the above graphs were recently derived from marine microfossil-based data preserved in a marine sediment core obtained from the North Atlantic Ocean. These data indicate that sea surface temperatures were substantially warmer than today between about 2.7 to 3.1 million years ago and again between 3.4 to 4.0 million years ago. The vertical lines in each diagram represent the modern-day sea surface temperature at that latitude in the North Atlantic in winter (left) and summer (right). Data from many such sites in the world's oceans will be used to reconstruct global climate conditions in the past that will improve our understanding of the probable consequences of future global warming.

Glaciers are sensitive to changes in global climate changes, and therefore monitoring changes in glacier extent and volume over a period of years or decades may provide indications of the possible onset of global warming (or other climate changes). A substantial global warming would ultimately lead to accelerated melting of many glaciers and icecaps, but shorter term response to the onset of warming may actually result in glacier expansion in at least some regions. Monitoring key glaciers at various latitudes by means of remote sensing and ground based surveys will provide a useful basis for documenting changing glacier regimes. Reference to available satellite images of glaciers obtained during the past 15 years or more will provide a baseline for measuring recent and future changes in glacier extent. The USGS will begin new efforts in glacier monitoring in FY 1990.

Permafrost temperature profiles have been found to be sensitive recorders of past fluctuations in ground temperatures at high latitudes. USGS scientists have been pioneers in this subject, developing methods and instrumentation to monitor permafrost temperature profiles and interpreting the results. The Climate Change Program begins an intensified effort in permafrost temperature monitoring in FY 1990, with an initial focus on expanding observation networks in northern Alaska. Repeat measurements of ground temperature profiles in permafrost regions during the next decade will provide a baseline that may prove to be useful for documenting possible future climate (temperature) changes at high latitude. This research is of particular importance because current General Circulation Models all predict that a doubling of atmospheric carbon dioxide content during the next century will probably cause a global warming of about 2 to 5 degrees C, but that high latitude regions will undergo significantly more dramatic warming. High latitude warming may result in dramatic changes in the extent of sea ice and glaciers, and cause disruptions of ecosystems, both marine and terrestrial.

Polar climate history research focuses on Alaska and northwestern Canada during FY 1990. The objective will be to begin reconstructing the history of climate and environmental changes in this high latitude region during the past about 20 million years. This effort will be conducted in cooperation with the Geological Survey of Canada. Improved understanding of the record of high latitude climate change and environmental consequences of climate change will contribute to our ability to anticipate the probable consequences of future climate changes in these regions.

Climates of Arid Regions: The USGS Climate Change Program is undertaking a research effort to improve understanding of the relationships between climate, environments, and surficial geologic processes in arid and semi arid regions. The geographic focus of this research and monitoring effort is the arid southwestern regions of the U.S. This research includes monitoring of weather/climate conditions and changes in wind transport of sediment in five types of deserts in Arizona and New Mexico using unmanned USGS GEOMET instrument stations that measure meteorological conditions and wind transport of sediments. These stations telemeter data 24 hours per day via satellite and land-line to the USGS Field Center in Flagstaff, Arizona. The research also involves monitoring of changes in vegetation cover and soils/sediment texture over time in desert regions adjacent to the GEOMET stations. Expanding human populations in arid and semi-arid regions of the U.S. place additional pressures on an already sensitive environment as population growth increases the demand for water, recreational areas, grazing lands, and other resource use and

development. It is therefore important to understand the relationships between arid environments, surficial processes, and climate in order to better anticipate the likely consequences of climate change on these desert environments. This research is being carried out in cooperation with NASA, DOD (U.S. Army), NOAA, USDA, and academia.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate
Pliocene marine climates	2	2	2	3
Pliocene terrestrial climates	2	3	3	3
Carbon cycle research	1	1	1	2
Glacier monitoring	0	2	2	2
Glacier ice core studies	0	0	0	1
Permafrost monitoring	0	1	1	1
High latitude climates	0	2	2	3
Arid region climates	0	2	2	3
Paleoceanography	0	2	2	3
Cenozoic terrestrial climates	0	0	0	2
Biogeochemical research (e.g., methane in permafrost)	0	1	1	1
Volcanic emissions	0	0	0	1
Geochronology, stable isotopes research	2	3	3	3
Total Projects	7	19	19	28

Increase for FY 1991	FY 1991 Base	FY. 1991 Estimate	Change
$(000's)	3,049	9,749	+6,700
FTE	32	52	+20

The USGS Climate Change Program responds directly to the President's initiative for the Federal Global Change Research Program now underway. This program will contribute data and interpretations relating to many of the science priorities listed in the Interdisciplinary Science Elements of the Federal Global Change research Program as defined by the Committee on Earth Sciences.

Several USGS research projects supported by the Climate Change Program will involve interagency, academic, and international collaboration and data exchange. Improved understanding of the causes, rates, frequency, and consequences of past global climate changes are required in order to properly evaluate the predictions derived from General Circulation Models (GCM's). Such computer models are being used to predict the consequences of increasing the carbon dioxide content of the atmosphere during the next century. There are many versions of these GCM's in use, and they often produce quite different results. Therefore policy makers are faced with a wide range of possible outcomes of "greenhouse warming." This research will help determine which outcome is more credible. The geologic record can be used to find out what the Earth's climate has done in the past, how rapidly changes have occurred, and how the environment has responded to past changes in climate.

In FY 1991 in addition to expanded research in (1) paleoclimate research, (2) polar climate research, and (3) arid regions climate research, two new research categories will begin. These are (1) biogeochemical research, and (2) volcanic emissions.

Paleoclimate research will be expanded to encompass a broader range of studies of past marine and terrestrial climates and environments, including an expansion of the ongoing research effort to reconstruct global climate and environmental conditions during the Pliocene. The broad time interval of primary interest to the Climate Change Program during FY 1991 will be the past 20 million years. The program expansion will permit acquisition of state of the art stable isotope laboratory equipment designed to provide high quality oxygen isotope ratios needed to reconstruct past temperatures from small samples. This is needed to carry out rapid analysis of large numbers of samples collected from many parts of the world, particularly the world's oceans.

Polar climate research will include expanded efforts to monitor permafrost temperature profiles in Alaska in order to determine the recent history of climate change at high latitudes, and to provide baseline data that can be used to document the possible onset of climate change in these regions during the next several decades. Efforts to monitor glacier extent and ice volumes will be expanded in FY 1991, in collaboration with the USGS Water Resources Investigations and National Mapping, Geography, and Survey Activities. Any significant change in the global volume of glacier ice will have an influence upon sea level, and therefore threaten coastal regions of the world. Under an expanded program, the USGS will establish a glacier/ice core research capability in order to extract high quality records of changes in global climate, atmospheric composition, and amounts of dust in the atmosphere over the past

160,000 years or more. A terrestrial drilling program will be initiated in FY 1991 to obtain high quality terrestrial sediment cores from high latitude basins in order to reconstruct climate history of northwest North America during the last 20 million years. This will be done in collaboration with the Geological Survey of Canada.

Arid regions climate research will expand in FY 1991 to include major research efforts to improve understanding of the relationships between climate and surficial geologic processes. This will involve studies of erosion and deposition of sediments by wind and water, weathering and soil formation processes, and the influence of climate change on vegetation. Arid regions research will also include a paleoclimate component to provide a long term perspective on climate and environmental change in desert regions. USGS research on arid regions climates will be carried out in cooperation with NASA, DOD (U.S. Army), NOAA, and USDA.

Biogeochemical research in FY 1991 will focus upon methane in permafrost, and the global carbon cycle. It is imperative to improve understanding of the sources and repositories of carbon because of growing concern about the increases in carbon dioxide in the atmosphere that may result in the warming of global climate. This research effort will be done in cooperation with DOE and NSF funded academic institutions.

Volcanic emissions research will be aimed at improving estimates of the volumes and composition of volcanic gases produced over time and their contribution to the composition of the atmosphere. Research will also focus upon the role volcanic ash plays in short term cooling of global climate when they are injected into the upper atmosphere during major eruptions. This research will be done in collaboration with academia volcanologists funded by NSF.

Distribution of change by object class:

The object class detail for the proposed $6,700,000 increase is as follows:

	FTE	Amount
Personnel Compensation- - - - - -	20	$1,000,000
Personnel Benefits- - - - - - - -		100,000
Travel and Transportation of Persons - - - - - - - - - - - -		490,000
Transportation of Things- - - - -		150,000
Communications, Utilities, and Miscellaneous Charges - - - - -		350,000
Printing and Reproduction - - - -		160,000
Other Services- - - - - - - - - -		1,700,000
Supplies and Materials- - - - - -		750,000
Equipment - - - - - - - - - - - -		2,000,000
Total - - - - - - - - - -	20	$6,700,000

Coastal and Wetlands Processes

Objectives: The objective of this program is to provide geological information about the nature, extent, and causes of coastal erosion and wetlands loss as input to decisions pertaining to the prediction and mitigation of coastal erosion and wetlands loss by various Federal and State agencies.

Base Program: Many of the processes contributing to erosion and wetlands loss are poorly understood and are not quantifiable with any degree of confidence. These processes must be better understood in order to predict the future shoreline and wetlands response and, thus, allow better management of our coastal and wetlands resources. Coastal erosion is a problem of national proportion both economically and demographically, and is certain to be made worse by future climate warming leading to rising sea levels. According to a recent EPA report the cost of mitigating a 1 meter rise in sea level by the year 2100 is estimated to be well in excess of $100 billion. While this report is conjectural, it nevertheless effectively demonstrates the economic magnitude of relatively small sea level rises.

The Coastal and Wetlands Processes program contributes to the Human Interactions and Solid Earth Processes components of the U.S. Global Change Program by providing assessments of the geologic consequences of climate change and human activities on the U.S. coastline and interior lake shorelines. Of the 30 States bordering an ocean or Great Lake, all have erosion problems and 26 presently experience a net erosion of their shores. Topical studies undertaken to better quantify processes causing coastal erosion and wetlands loss are related to sea level rise and the results are presented in a form that can be applied to practical problems, such as prediction of future shoreline changes. The geologic framework is established within which erosion and wetlands loss is taking place.. The stratigraphy and geomorphology provide a broad regional understanding of the historical development of the coasts and contribute to a conceptual understanding of the processes involved. Hurricanes, tropical storms, and cold fronts all contribute to coastal erosion and wetlands loss and their effects are measured using pre- and post-storm aerial videotapes, mapping photography, beach profiles, and direct measurements of waves, currents, and resultant erosion.

The program in 1990 consists of the following four major studies:

Louisiana Barrier Island Erosion Study. Louisiana's barrier islands are undergoing extensive erosion, up to 60 feet per year. The causes of such large scale erosion are complex and varied but the major factors are inundation due to relative rise in sea level, the combination of land subsidence and global rise in sea level, and diminished sand supply reaching the coast.

FY 1990 is the last year of this planned 5-year study. The emphasis will be on completing the analyses and interpretation of the geologic and oceanographic data collected. Final reports and maps will be completed incorporating input from scientists at the Louisiana Geological Survey and Louisiana State University (LSU).

Recent accomplishments include:

- Continued analyses of volumes of material historically eroded near Louisiana's barrier islands. These data are providing valuable information on patterns and rates of sediment movement.
- Completed field work for geologic framework aspect of the study.
- Completed most of the field work on oceanographic processes during storms.
- Continued detailed analyses of geologic framework and oceanographic processes.

Louisiana Wetlands Loss Study. The Louisiana wetlands are undergoing rapid disintegration at a rate of over 100 acres a day, which is having serious effects on the environment and on the economy. The main factors thought to be responsible for wetlands loss include high rates of land subsidence, reductions in fresh water runoff and fine sediment dispersal from the Mississippi River, construction of an extensive network of canals for oil and gas development, and salt water intrusion into fresh water marshes.

Work will continue during FY 1990 on investigations to examine the critical geological and physical processes that contribute to wetlands loss in the delta plain of Louisiana. As detailed in the study plan, the tasks are being carried out jointly with the U.S. Fish and Wildlife Service in close coordination with the appropriate Federal and State agencies. Specifically, during FY 1990, intensive field work on critical land loss processes will be conducted. These studies will focus on the sediment starved Terrebonne basin.

Recent accomplishments include:

- Determination of field sites for detailed process studies.
- Completed contract negotiations for second year contract with Louisiana State University to investigate wetlands processes.
- Completed contract negotiations to develop a coastal Geographic Information System with Louisiana Geological Survey.
- Completed contract negotiations with a private environmental firm to study the effects of small scale fresh water diversions on wetlands processes.

Southern Lake Michigan Coastal Erosion Study. The recent historically high lake level elevations in the Great Lakes that, combined with waves and surge flooding associated with storms, have caused significant coastal erosion and damage to shorelines, particularly in urban areas such as Chicago. The study plan includes geological surveys of the nearshore regions to assess the extent of erosion, to locate and delineate sources of sand to rebuild damaged portions of the shore, and to provide information needed to predict future cycles of lake level change. In addition, EPA, as part of their mission, is studying the occurrence and distribution of toxic chemicals in the Great Lakes. The sediment cores that are made available through our research may produce important baseline data for their studies.

Field data collection in FY 1990, in cooperation with the Illinois and Indiana State Geological Surveys, will focus on the recent lake level fluctuations and resultant lakeshore erosion and property damage. Hydrographic and geophysical surveys, sediment transport studies, and other field investigations will be the basis for the USGS to produce maps and reports explaining the extent and causes of lake level fluctuations and shore erosion in the Lake Michigan region.

Recent accomplishments include:

- Continued field work to assess prehistoric lake levels.
- Completed most of the field work for the regional assessment of geologic framework.
- Completed planning for initial process studies involving instrument deployment in the fall of 1989.

Alabama/Mississippi Coastal Erosion and Pollution Study. The Mississippi Alabama coastal region is a dynamic interrelated system of barrier islands, tidal inlets, wetlands, and estuaries that are currently undergoing environmental and physical change due to both natural processes and man's activities. The region is undergoing erosion up to 9 feet per year in places and is subjected to hurricane impacts on the average of once every four years. For example, during 1985, Hurricane Elena destroyed nearly 50% of the houses located on the western part of the developed area of Dauphin Island, Alabama. Furthermore, the region is increasingly threatened by pollution from various sources.

FY 1990 will be the first year of a planned five-year effort in cooperation with the Alabama Geological Survey and the Mississippi Bureau of Geology. The study was originally planned to focus on understanding the physical processes causing erosion and movement of pollutants in the coastal zone. By understanding these processes, our ability to predict future erosion and the dispersal of pollutants will improve. During FY 1990, work on geologic framework will be implemented and the first phase of using remote sensing to map and delineate nearshore circulation will begin.

Other Activities:

In addition to directly appropriated programs, the USGS has been involved in wetlands related activities with other Federal agencies on a reimbursable basis for quite some time. In the Everglades National Park (NPS), background geochemical and biogeochemical information was gathered to assess the potential impact of point source pollution (FY 1984-89). The background geochemistry and biogeochemistry of Cape Romain, S.C. National Wildlife Refuge (Fish and Wildlife Service, FY 1987-89; and Kenai, AK National Wildlife Refuge, FY 1989) was determined to provide a baseline for future comparison (Cape Romain) and to assess potential point source pollution impacts on the Kenai NWR. Five areas in the west have been studied for the Bureau of Reclamation (BOR) (FY 1985-1990) to estimate the potential harmful contaminants that may be introduced into wetlands areas as a result of increased irrigation by BOR. Similar work is currently being negotiated with BOR for up to six additional areas in FY 1990.

Further, Public Law 100-220 required that a study plan to carry out shoreline mapping of all five Great Lakes be developed by the USGS and NOAA as a cooperative mapping effort. The Coastal and Wetlands Processes program submitted its portion of the study plan to NOAA in FY 1989.

National Coastal and Wetlands Processes Program Study Plan. Congress has directed USGS to formulate a plan to extend the present series of regional studies to a research program of national scope. The plan will be prepared and submitted to Congress by May 31, 1990.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adjusted Approp	FY 1991 Base	FY 1991 Estimate
Regional geophysical surveys	2	2	2	0
Detailed bathymetric surveys	1	1	1	0
Coring surveys	1	1	1	0
Oceanographic measurements	2	2	2	0
Critical Process Studies	5	5	5	1
Coastal & Inland Wetlands Studies	0	0	0	3

Decrease for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	6,036	2,936	-3,100
FTE	11	4	-7

In FY 1991, $2,936,000 supports the Administration's goal of "increasing the quantity and quality of the Nation's wetlands resource base," (from Protecting America's Wetlands: An Action Agenda by The Conservation Foundation) and the President's commitment to "no net wetlands loss." To accomplish these objectives, it is necessary to gain an improved understanding of the geologic, hydrologic, and geochemical dynamics of wetlands systems.

This research will develop the information needed by land managers and regulators to predict the impact of man's activities on wetlands. The research would also provide information needed by land managers and regulators to evaluate the utility of efforts to maintain and create new wetlands in order to meet the President's goal of no net loss.

Improved understanding of processes will be accomplished through research on:

(1) the geologic framework and processes affecting the occurrence, evolution and maintenance of wetlands,

(2) the internal geochemical processes within wetlands, including the cycling of nutrients and toxic elements, and the baseline geochemical composition of wetlands to provide a basis for future comparison and to estimate the availability of constituents to the ecosystem.

In FY 1991 studies include:

- In the Great Lakes Region--A study of the geologic aspects of the evolution of wetlands in this inland, freshwater, coastal area.
- In Louisiana--At reduced levels, the continued investigation of the aggrading Atchafalaya basin and GIS development.
- In Florida--A study to assess the geologic processes contributing to coastal wetlands loss.
- In the Mississippi Valley and the Great Plains--A study of the geochemical processes active in the wetlands of these diverse regions.

The decrease reflects suspension of most studies currently being conducted under the Coastal and Wetlands Processes program at the end of FY 1990. All field studies on the barrier islands of Louisiana were completed in FY 1989 and reports prepared in FY 1990. The southern Lake Michigan and the Louisiana wetlands completed their third and second year of intensive study in FY 1990, respectively. The Louisiana wetlands study will continue in FY 1991. Emphasis in the Great Lakes region will be redirected to address the evolution of wetlands in this inland, freshwater, coastal area. Data from these studies will be provided to Federal, State, and local agencies and other land planners and managers. These data contribute to the development of plans for mitigating coastal erosion and wetlands loss.

Distribution of change by objective class

The object class detail for the proposed $3,100,000 decrease is as follows:

	FTE	Amount
Personnel Compensation - - - - - - - - - - -	7	$ 350,000
Personnel Benefits - - - - - - - - - - - - -		70,000
Travel and Transportation of Persons - - -		440,000
Transportation of Things - - - - - - - - - -		60,000
Communications, Utilities, and Misc. Charges- - - - - - - - - - - - - - -		100,000
Printing and Reproduction- - - - - - - - - -		60,000
Other Services - - - - - - - - - - - - - - -		1,470,000
Supplies and Materials - - - - - - - - - - -		150,000
Equipment - - - - - - - - - - - - - - - - - -		400,000
Total - - - - - - - - - - - - - - - - - -	7	$3,100,000

Justification of Program and Performance

Activity: Geologic and Mineral Resource Surveys and Mapping
Subactivity: Offshore Geologic Surveys

(Dollar amounts in thousands)

Program Elements		1990 Enacted to Date	1990 Adjusted Approp.	1991 Base	1991 Estimate	Inc.(+) Dec.(-) from Base
Offshore Geologic Framework	$	26814	26450	26936	26936	0
	FTE-T	349		349	349	0
Total Requirements	$	26814	26450	26936	26936	0
	FTE-T	349		349	349	0

Impact of Public Law 99-177

	1990 Enacted to Date	PL 99-177 B.A. Cancellation	1990 Adjusted Approp.
Offshore Geologic Surveys	26814	-364	26450

The impact of this reduction on this subactivity will decrease the operating funds for all projects and result in curtailed fieldwork, equipment purchases, and data analyses.

Authorizations

4 U.S.C. 31(a) and (b)	The Organic Act of 1979, as amended, provides basic authority for the Geological Survey to examine the geological structure, mineral resources, and products of the national domain as extended to include examinations outside of the national domain.
46 U.S.C. 31(a) and (b)	The Coastal Zone Management Act Amendments of 1976 provide that each department, agency, and instrumentality of the Executive Branch of the Federal Government may assist the Secretary (of Commerce), on a reimbursable basis or otherwise, in carrying out research and technical assistance for coastal zone management.
43 U.S.C. 1865	The Coastal Zone Management Act Amendment of 1978 provide for management of oil and natural gas in the Outer Continental Shelf and for other purposes. The Minerals Management Service is responsible for carrying out all functions in direct support of

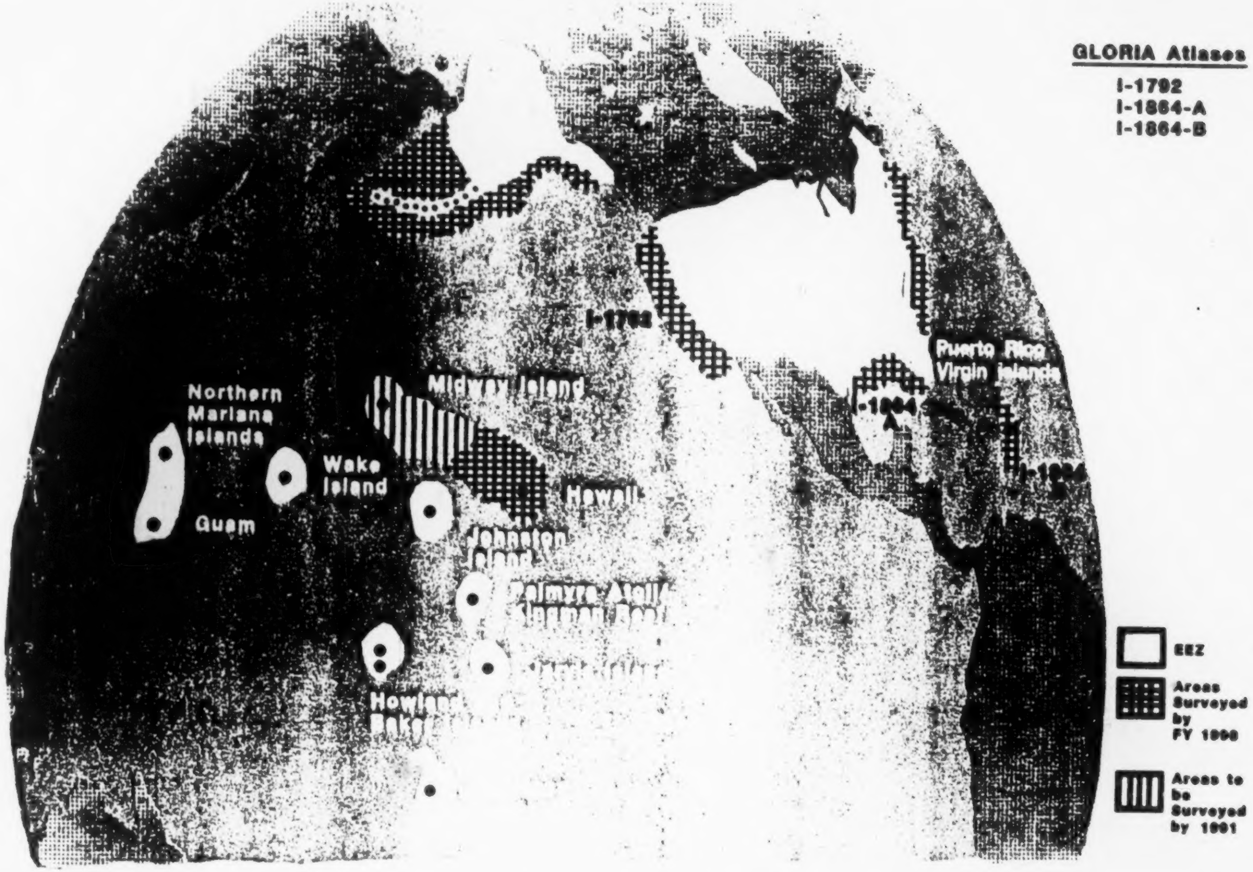
management of the OCS program. The U.S. Geological Survey provides indirect support to the Department's management activities through its basic mission to examine the geological structure, mineral resources, and products of the national domain which, offshore, includes the EEZ.

30 U.S.C. 1419 et seq. The Deep Seabed Hard Mineral Resources Act of 1980 provides authorization for conducting a continuing program of ocean research that "shall include the development, acceleration, and expansion, as appropriate, of the studies of the ecological, geological, and physical aspects of the deep seabed in general areas of the ocean where exploration and commercial development are likely to occur..." The Geological Survey, based on expertise developed in regional offshore geologic investigations, provides geological and mineral resource expertise in responding to the requirements of the Act.

43 U.S.C. 1301 The Marine Protection, Research, and Sanctuaries Act of 1972 provides that the Secretary of Commerce must consult with the Secretary of Interior prior to designating marine sanctuaries. The Geological Survey provides information regarding the energy and mineral resource potential in areas being considered for designation as marine sanctuaries.

Offshore Geologic Surveys provide basic geological and geophysical information for the continental margins and adjacent slope and deep-ocean areas. The research establishes the structural and stratigraphic relations of the subsurface offshore and correlates the offshore geologic framework with geologic features onshore. These activities provide a basis for the appraisal of the regional aspects of energy and mineral potential and an understanding of the processes that govern deep sea mineralization and oil and gas accumulation. The program further provides insights into geologic processes that influence the transportation and accumulation of marine sediments. The President's Exclusive Economic Zone (EEZ) proclamation increased the areas of submerged lands to be studied through Offshore Geologic Surveys from about 1 billion/acres to over 3 billion acres. Nearly all these deep-water oceanic areas are frontier regions where geologic data are sparse and our knowledge of these subsea geologic provinces and the seafloor mineral resource potential is only rudimentary. Geological Long-Range Inclined Asdic (GLORIA) surveys began in FY 1984 to obtain sonar images and will continue in FY 1990 and FY 1991 providing the basis for detailed verification studies for increased insight and understanding of the geologic framework, conditions and mineral potential of the EEZ (see figure G-10).

FIGURE G-10-- **GLORIA EEZ Surveys**


GLORIA Atlases
I-1792
I-1864-A
I-1864-B
Northern Mariana Islands
Guam
Wake Island
Midway Island
Hawaii
Johnston Island
Palmyra Atoll Kingman Reef
Howland Baker
I-1792
I-1864 A
I-1864 B
Puerto Rico Virgin Islands
EEZ
Areas Surveyed by FY 1990
Areas to be Surveyed by 1991

Offshore Geologic Framework

Objectives: To conduct, on a regional basis, scientific investigations aimed at the systematic understanding and description of the geologic framework, energy and mineral resources, and geohazards of the offshore areas of the United States and other areas of interest to the Nation's needs for a continued supply of resources.

Base Program: This program serves national needs by developing or extending our understanding of the formation, location, and geologic framework of mineral and petroleum resources, the geohazards that may affect their exploitation, and how their occurrence in oceanic areas can help in the search for analogous onshore deposits of economic significance. The offshore domain covers approximately 30 percent more than the area of the onshore continental United States, and offshore geologic surveys are intended to discover and define elements of the geologic framework as part of a fundamental understanding of the crustal plate containing the United States. Program emphasis is on broad basic research in marine geology with the aim of providing information to various users and the concerned public, and the conveyance of geologic expertise regarding issues, concerns, and solutions to Federal, State, and local agencies involved in the management and leasing of offshore areas. This program is based on a continuing accumulation of data leading to an increased understanding of the geology of the submerged parts of the continent (the Continental Margin) and the areas of concern beyond.

Major goals of the program are: (a) the systematic mapping and synthesis of information on the general geologic framework of the Continental Margins and deep ocean areas within the EEZ; (b) the seaward advancement of geologic knowledge, such as continued discovery of offshore basins prospective for petroleum and the continued discovery of valuable mineral deposits; (c) the predictive evaluation of the energy and mineral resource potential of regions, including the probabilistic assessment of the resources contained therein, for national planning purposes; (d) the study of fundamental marine sedimentary processes that shape the continental margins and influence their use; (e) the conduct of special topical studies, such as geochemical and geotechnical analyses; and (f) cooperative programs with coastal States in assessing offshore resources and environmental problems.

The program is conducted by means of marine geophysical, geologic, and wide-swath sonar surveys incorporating seismic reflection and refraction profiling techniques; imaging sonar mapping of the seafloor; drilling, coring, and sampling of ocean floor sediments; instrumentation placed on or below the seafloor to measure certain parameters such as heat flow, seismicity, or near bottom currents; and observations and measurements by diving or remote means. Ships of the Federal government, academic institutions, and the private sector are used to collect the data. Laboratory and computer-based analyses are interpreted and the results documented in reports and maps, all of which are publicly available.

The program is designed to assist other agencies of the Federal government such as the Department of State (evaluation of alternate offshore international boundaries), the Department of Energy (energy-related engineering issues and resource availability predictions), the Department of Defense (offshore geologic mapping and gravity surveys) and to support other Department of the Interior program requirements. The Survey is also communicating research results to the Environmental Protection Agency and Office of Naval Research for their use in ongoing programs.

For mapping in the EEZ, a joint USGS/NOAA office has been established to coordinate USGS sonar mapping with NOAA's bathymetric mapping and to coordinate research activities. The purpose of this joint activity is to establish goals for future mapping, identify mapping objectives, coordinate schedules and provide for dissemination of the results in the form of maps, reports and data. Research results are presented and future priorities are identified through biennial EEZ Symposia hosted by the USGS and NOAA.

Cooperative programs with coastal States are conducted to provide the most recent technology and geologic expertise to State planning activities. This involves investigations of sand and gravel resources in coastal States' waters and geochemical studies of pollutants in estuaries. Also, programs to understand the geology and geologic processes in polar regions are conducted cooperatively with other Federal agencies and internationally. In the international realm, on a reimbursable basis, the program assists the Department of State, the Agency for International Development, the United Nations, and other entities that require marine geologic expertise. In a cooperative manner, international activities are conducted when such activities are advantageous to domestic programs or to obtain expertise and technology not available in the United States.

This program has four subelements:

a. Marine deposits and sedimentary dynamics studies are focused on presently active geologic processes modifying the continental shelf, slope, and the deep seafloor. These studies are also key to the understanding of processes that formed sedimentary deposits throughout geologic time. Topics of concern are the shape and distribution of major sedimentary bodies and the mechanics of their formation; the geologic conditions conducive to and the physics involved in large-scale mass failures (geologic hazards) on the ocean floor; and the dynamics of transport of sediments and pollutant dispersal on the continental shelf, slope, and rise and in submarine canyons.

b. Regional geologic framework investigations of the Continental Margins and deep ocean basins include studies of the regional stratigraphy, paleoenvironmental conditions, and structural setting of selected areas. All of these influence the formation and location of petroleum and mineral deposits. Research on tectonism, seismicity, magmatism, and volcanism are also conducted in relation to the formation of marine deposits, ocean floor spreading, development of oceanic trenches, evolution of islands and land masses, and hazards such as earthquakes. These activities lead to the analysis and interpretation of the evolution of Continental Margins and their changing physiography. Information obtained is used in ascertaining existing and past geologic settings as a precursor to investigations of energy and mineral resources. This program subelement provides the basic information about geologic framework needed for the resource assessment of the EEZ.

c. Formation of marine energy and mineral deposits studies are concerned principally with understanding the processes and conditions that govern the genesis of petroleum, metalliferous minerals (e.g., sulfide deposits which generally contain nickel, cobalt, silver, and other strategic commodities), and nonmetallic minerals (e.g., phosphate on the Continental Shelves which is important to agriculture). As a result of the EEZ proclamation and congressional directives, special emphasis is being placed on studies of sulfide deposits on the Juan de Fuca Ridge off Oregon and Washington and on the Gorda Ridge off California and Oregon. These deposits, discovered by the Geological Survey, appear to be rich in metals, but determining their extent and origin will take several years. Other metallic deposits under investigation are cobalt-rich manganese crusts forming around the Hawaiian Islands and United States Insular Territories. The cobalt content of these crusts, if proven economical to extract, would be a significant domestic source of a critical commodity for which the Nation is currently dependent on imports. Titanium-rich heavy mineral placers are under investigation off the East Coast. The search for mineral deposits continues to expand seaward into deeper waters. Due to the diversity of offshore geologic settings, several earth science disciplines have been merged to achieve significant results and to develop geologic exploration models and resource evaluation methods for marine minerals.

d. Exclusive Economic Zone (EEZ) surveys and mapping. In 1983, President Reagan proclaimed sovereign rights and jurisdiction of the United States over an "Exclusive Economic Zone" that extends for a distance of 200 nautical miles seaward of our shorelines, approximately trebling the area of U.S. submerged lands (Figure G-10). Nearly all of these deep water oceanic areas are frontier regions where geologic data are sparse and our knowledge of subsea geologic provinces and the seafloor mineral resource potential is only rudimentary.

EEZ surveys and mapping consists of a sequential set of investigations that permit increasingly detailed (or higher resolution) observations at the seafloor and the subseafloor. The sequence of six overall phases begin with reconnaissance-scale mapping of the seafloor by means of imaging sonar (GLORIA) surveys and correlation of the data with NOAA's bathymetric survey results. Steps 2 through 6 are conducted on a more narrowly focused basis and consist of:

- Verification surveys, using multichannel and other geophysical techniques to map the subsurface geology leading to correlation with surface features.
- Intermediate and short range side-scan surveys combined with high resolution seismic profiling.
- Transponder-navigated drilling, coring, dredging of bottom rock and sediments combined with photography.
- Sample analysis and graphic digital map production generation.
- Base map compilation using all information obtained and publication of the results through the Continental Margin Mapping Program (CONMAP).

Preparation of the Continental Margin Map series, which will provide frequently updated summaries of the geologic aspects of the EEZ, is currently underway.

Emphasis in FY 1990 focuses on publishing wide-swath (GLORIA) sonar data and corollary bathymetric and geophysical data in Atlas form for the EEZ off the Atlantic coast and in the Bering Sea and on interpreting sonar image data acquired in FY 1989 of the seafloor in the EEZ south of Alaska's Aleutian Islands and south of the Gulf of Alaska and from Necker Ridge south in the EEZ off Hawaii. In FY 1990, a multiyear survey of the Hawaiian EEZ will continue, using a U.S.-owned version of the GLORIA. Verification studies in California/Oregon/Washington, Gulf of Mexico, Puerto Rico, and U.S. Virgin Islands are scheduled and investigations of the geologic framework of the U.S. continental margins will be ongoing. These investigations depend heavily on the collection of multichannel seismic data. In FY 1991, sonar surveys will be conducted on the north-central Hawaiian Ridge to map the seafloor at the rate of approximately 300,000 square nautical miles annually, and collection of verification samples and seismic data will continue in the conterminous U.S. Pacific Coast and Gulf of Mexico, along with analyses of samples and data collected in FY 1990. The sonar surveys contribute to the U.S. Global Change Program by identifying the geographic location of large numbers of previously unknown submarine volcanoes. Such volcanoes, when active, can inject heat, gases, and other eruptive products into the oceans and atmosphere, possibly causing short- or long-term changes in climate.

Recent activities and accomplishments for the Offshore Geologic Survey's subactivity include:

- o As requested by the Congress, a feasibility study on alternative locations for the Deer Creek marine research facility will be completed in FY 1990.
- o Atlases of GLORIA image maps of the EEZ off the Atlantic coast and in the Bering Sea were published. Geologic interpretations and geophysical data are also included in the atlases.
- o Digital data and image maps of the EEZ off the Atlantic coast and in the Bering Sea were also released on CD-ROM discs, making the data available to a broad personal computer based user community.
- o Completed GLORIA sonar mapping of the EEZ south of Alaska, and continued mapping along the northern and central Hawaiian Ridge. The image maps reveal unknown topographic features and geologic processes associated with the Aleutian Trench, a collisional plate boundary.
- o Obtained detailed high frequency sidescan sonar coverage, bottom samples, and current meter measurements on a portion of the continental shelf near the Farallon Islands off San Francisco in an area of highly variable bottom morphology. This information is important for multiple-use decisions for the coastal ocean adjacent to this population center.
- o Geologic maps based on Sea Beam bathymetry in the Monterey canyon area were used to site submersible dives, which observed for the first time communities of organisms living on fluids flowing out of the canyon walls.

- Published an analysis of the geological development of the Delgada Fan that integrated different data sets, including GLORIA imagery deep-sea drill hole results, bathymetry, and seismic reflection profiles. It was shown that this feature evolved principally during the past few million years on the northwestward migrating Pacific Plate.

- Completed a review of regional framework studies off central and southern California, Washington, and Oregon and integrated the data off California with deep-penetration multichannel seismic reflection profile data acquired in the area. This information delineates the structures and stratigraphy of the basins of the margins.

- Completed compilation of geophysical data focusing on the rift basin structure and evolution of the Atlantic continental margin, Great Lakes, and Antarctic margin.

- Seismic and heat flow surveys, conducted jointly with the Geologic Survey of Canada, identified a regional zone of sediment disruption and high heat flow associated with the large massive sulfide deposits in the sediment-covered Escanaba Trough, southern Gorda Ridge. Piston and gravity coring in the Escanaba Trough recovered highly altered sediment and sulfide that indicate the occurrence of hydrothermal activity and subsurface massive sulfide deposits well beyond the area of exposed mounds and chimneys.

- Integration of multibeam bathymetry data, geophysical data, and observations and samples from the Soviet submersibles (MIRS) provide detailed information on the Mid-Atlantic Ridge, its processes, and its geologic history. The midocean ridges are important for mineral formation, they contribute to the chemistry of the oceans, which influence climate, and they are the location where the surface of the Earth renews itself.

- Work was completed on a pilot study to determine paleoceanographic conditions from the textural, mineralogic, and chemical composition of ferromanganese crusts. Not only are crusts a resource, but they record the history of the oceans chemistry and circulation patterns.

- Proceedings from the fourth biennial EEZ symposium were published. The proceedings highlight the partnership between States and the Federal Government in implementing a mapping and research plan for the EEZ.

- A marine geophysical and geologic study was conducted in the Arctic Ocean in FY 1989 using the U.S. icebreaker Polar Star. Seismic data and sediment samples will be used to map offshore marine gas hydrates. Marine hydrates are important because they may have resource potential as well as contributing to ocean floor geohazards (e.g., landslides).

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate
Marine depositional and sedimentological studies	12	12	12	12
Regional geologic framework studies	21	19	19	19
Formation of marine energy and mineral deposit studies	18	18	18	18
EEZ surveys, resource inventory, and scientific applications:				
Regional sonar-imaging surveys	5	5	5	5
High-resolution geophysical surveys	1	1	1	1
Verification studies	4	4	2	2
Province base-map compilation	3	3	3	3
Continental Margin Maps				
Start	6	6	6	6
Complete	6	6	6	6

Justification of Program and Performance

Activity: Geologic and Mineral Resource Surveys and Mapping
Subactivity: Mineral Resource Surveys

(Dollar amounts in thousands)

Program Elements		1990 Enacted to Date	1990 Adjusted Approp.	1991 Base	1991 Estimate	Inc.(+) Dec.(-) from Base
National Mineral Resource Assessment Program	$	24513	23872	24712	23212	-1500
	FTE-T	379		379	379	0
Strategic and Critical Minerals	$	9708	9708	9797	9797	0
	FTE-T	170		167	167	0
Development of Assessment Techniques	$	13256	13256	13364	13364	0
	FTE-T	209		209	209	0
Total Requirements	$	47477	46836	47873	46373	-1500
	FTE-T	758		755	755	0

Impact of Public Law 99-177

	1990 Enacted to Date	PL 99-177 B.A. Cancellation	1990 Adjusted Approp.
Mineral Resource Surveys	47477	-641	46836

The impact of this reduction on this subactivity will decrease the operating funds for all projects and result in curtailed fieldwork, equipment purchases, and data analyses.

Authorization

43 U.S.C. 31(a)	The Organic Act of 1879 authorizes the Geological Survey to conduct "an examination of the geological structure, mineral resources, and products of the public domain." The basic authority has been amended to authorize mineral resource studies outside the national domain.
50 U.S.C. 98	The Strategic and Critical Materials Stock Piling Act of 1946 as amended by its Revision Act of 1979. Section 8 of the Act supports the Survey's programs

	for assessment of domestic minerals, especially for strategic and critical minerals, to complement the Federal mineral stockpile program.
16 U.S.C. 1131	The Wilderness Act of 1964 and numerous subsequent related Acts require that the Geological Survey and Bureau of Mines assess the mineral resources of each area proposed as wilderness or established as wilderness. The studies are to be on a planned and recurring basis.
30 U.S.C 21(a) 30 U.S.C. 1601 et seq.	The Mining and Minerals Policy Act of 1970 and the Materials and Minerals Policy, Research and Development Act of 1980 reemphasize the Survey's responsibility to assess the mineral resources of the Nation.
16 U.S.C. 1600 et seq.	The National Forest Management Act of 1976 (P.L. 94-588, as amended 1978) and the Renewable Resources Extension Act of 1978. The Geological Survey is a party in a five-agency agreement calling for the assessment of all resources on Federal land.
43 U.S.C. 1701	The Federal Land Policy and Management Act of 1976 specifically requires that the Geological Survey and Bureau of Mines do a wilderness mineral survey by 1991 of each area BLM recommends for wilderness suitability.
16 U.S.C. 3141-3150 3161	The Alaska National Interest Lands Conservation Act of 1980. Section 1001 of the Act requires that the Secretary of the Interior initiate a study of the potential oil and gas resources of Federal lands north of 68o North latitude, east of the National Petroleum Reserve, and west of the Arctic National Wildlife Refuge, and participate in a review of the wilderness characteristics of the area. Section 1010 of the Act requires that the Secretary of the Interior assess the oil, gas, and other mineral potential and expand the minerals data base for all public lands in Alaska. This responsibility has been delegated to the Geological Survey. Section 1011 of the Act requires an annual minerals report be presented to Congress; the preparation of this report also has been delegated to the Geological Survey.

22 U.S.C. 5094	**The Comprehensive Anti-Apartheid Act of 1986. Section 504 (b) of the Act calls for the President to develop a program which reduces the dependence, if any, of the United States on the importation from South Africa of chromium, cobalt, manganese, platinum-group metals, ferroalloys, and other critical materials as defined in the Strategic and Critical Materials Stock Piling Act.**

The Mineral Resource Surveys subactivity consists of three interrelated program elements (National Mineral Resources Assessment, Strategic and Critical Minerals, and Development of Assessment Techniques) designed to meet the following objectives:

- Provide timely and credible assessments of the Nation's mineral resources on which to base foreign and domestic policy decisions and to aid in long-range decisions related to mineral supply. Assess the mineral resources of specified land areas in the United States, particularly public lands, for resource management, land use policy, Congressional action, State and local government planning, and for identification of target areas for industry exploration.

- Identify mineral deposits that will increase the domestic mineral supply, particularly for the strategic and critical minerals.

- Improve current methodology and develop new techniques for identifying and evaluating mineral resources and analyzing resource data more efficiently and with greater precision.

- Effective stewardship of the nation's lands begins with informed decision making. The mineral resource investigations performed by the National Mineral Resources Assessment, Strategic and Critical Minerals, and Development of Assessment Techniques programs (see Figure G-11) provide the mineral resource information needed to consider numerous mineral issues in land-use decisions. These programs also contribute essential information for a) consideration of national-security-related issues and legislation such as those associated with mineral import dependency and anti-apartheid legislation, b) the chemical processes which affect the distribution and dispersion of pollutants, and c) the Nation's foreign aid programs to developing countries.

National Mineral Resource Assessment Program (NAMRAP)

Objectives: Mineral deposits are complex natural phenomena formed in diverse geologic settings by widely variable geologic processes that are incompletely understood. These intricacies and uncertainties, combined with the recognition that most undiscovered deposits may be buried beneath hundreds or thousands of feet of unmineralized surficial cover, present difficulties that challenge both our understanding of and our technology for assessing the potential for occurrences of undiscovered mineral deposits. Increasing reliance by U.S. industry on foreign sources of mineral raw materials, coincident with the mounting concerns of society for prudent and effective natural-resource and land-use planning, require that this challenge be met.

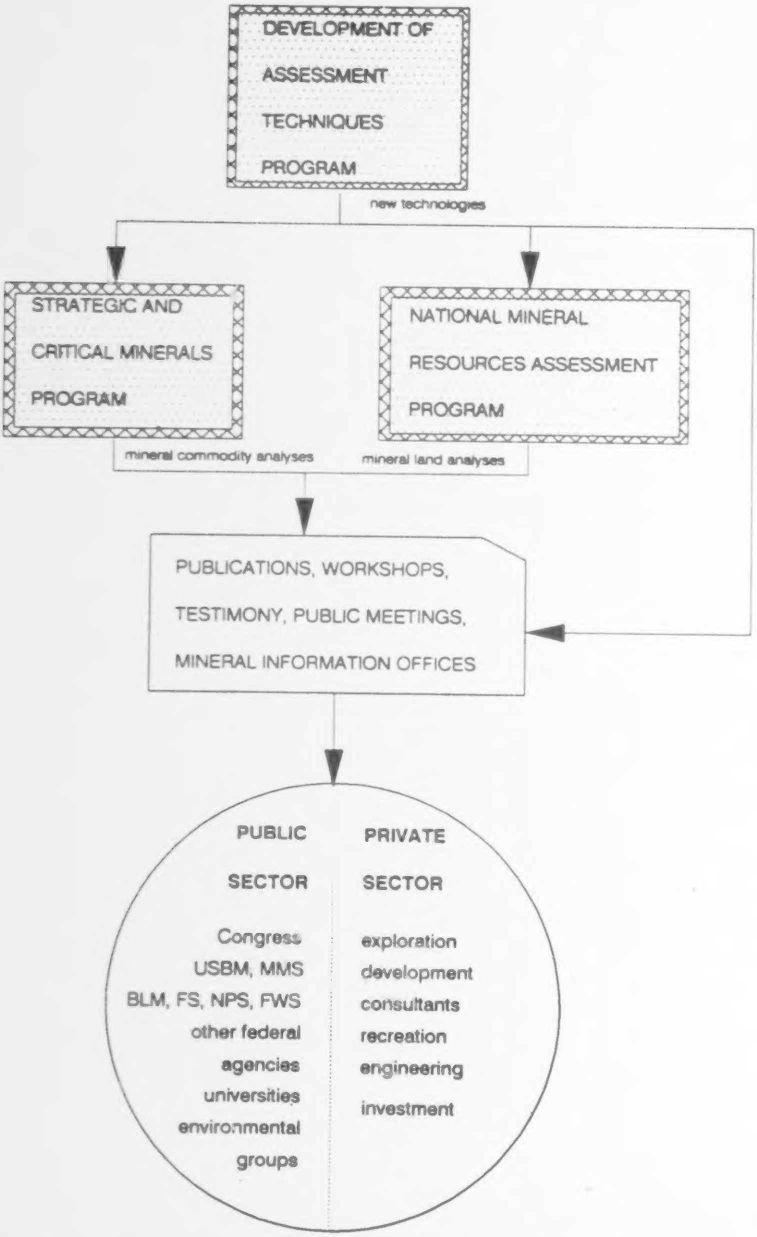

DEVELOPMENT OF ASSESSMENT TECHNIQUES PROGRAM
new technologies
STRATEGIC AND CRITICAL MINERALS PROGRAM
NATIONAL MINERAL RESOURCES ASSESSMENT PROGRAM
mineral commodity analyses
mineral land analyses
PUBLICATIONS, WORKSHOPS, TESTIMONY, PUBLIC MEETINGS, MINERAL INFORMATION OFFICES
PUBLIC SECTOR
Congress
USBM, MMS
BLM, FS, NPS, FWS
other federal agencies
universities
environmental groups
PRIVATE SECTOR
exploration
development
consultants
recreation
engineering
investment

FIGURE G-11: DIAGRAM SHOWING THE THREE USGS MINERAL-RESOURCE PROGRAMS THAT ENCOMPASS GEOLOGIC FIELD WORK, LABORATORY INVESTIGATIONS, AND LIBRARY RESEARCH TO PROVIDE TECHNOLOGY AND INFORMATION ON MINERAL RESOURCE ISSUES TO THE PUBLIC AND PRIVATE SECTORS

Programmatic activity for the Mineral Resource Surveys subactivity has a preeminent goal: identifying, assessing, and facilitating the long-term mineral supply for the Nation. The **NAMRAP** program furnishes the areal mineral resource framework necessary to achieve this goal. **NAMRAP** is the U.S. Geological Survey (USGS) program most directly responsible for providing comprehensive, modern assessments of the mineral resources of public and other lands in the conterminous United States, Alaska, Hawaii, and U.S.-affiliated insular areas. These are the only studies among those by industry, academia, the States, or the Federal Government that provide systematic, comprehensive assessments of those areas throughout the country that are most favorable for the occurrence of mineral resources. The **NAMRAP** program also conducts limited studies in foreign countries where such studies will provide geoscience information necessary for a thorough assessment of domestic resources. Such studies are most commonly conducted in regions adjacent to the United States and its affiliated insular areas.

NAMRAP assessments, together with supporting geological, geochemical, and geophysical studies, provide extensive mineral resource information to the public, industry, the academic community, and to those who are concerned with national mineral policy and land-use decisions. This information is crucial in order to: (1) identify and delineate areas that have significant mineral potential; (2) provide mineral resource information for planning the use of public lands; and (3) provide information on how land-management decisions affect the Nation's total resource base. These assessments furnish reliable, objective mineral resource information for development of national mineral policy to facilitate domestic and international supplies of strategic and critical minerals.

Base Program: The United States has a land area of nearly 2.3 billion acres, 740 million acres of which are in Federal ownership and largely are available to mineral development under the Mining Law of 1872. In addition, the USGS periodically is asked to perform mineral resource assessments and other studies on parts of 53 million acres of Indian lands. Mineral resource assessments are necessary for efficient, effective, and responsible management of all public lands, including lands managed by the Bureau of Land Management (BLM), U.S. Forest Service (USFS), Fish and Wildlife Service (FWS), National Park Service (NPS), Department of Energy (DOE), and Department of Defense (DOD). The principal criteria considered in selecting areas for study include: (1) the type and magnitude of mineral resources known or suspected to occur in an area; (2) favorability for the occurrence of strategic and critical minerals; (3) presence of Federal or Indian lands believed to have mineral potential; (4) priorities of Federal agencies for resource information for legislatively required land use and land management decisions affecting government lands, including decisions regarding suitability for wilderness classification; (5) interest expressed by U.S. industry; (6) recommendations of and cooperative funding and (or) staffing agreements with, State geological surveys; and (7) amount of previous work and the cost and complexity of obtaining necessary new data.

NAMRAP studies are carried out by interdisciplinary teams of geologists, geochemists, geophysicists, and mineral resource analysts and economists. All existing pertinent geoscience and resource data are compiled for each study area, and new data are gathered as appropriate, using a wide variety of geological, geochemical, geophysical, and remote sensing techniques. This comprehensive interdisciplinary approach provides the fundamental data base that allows the USGS to respond quickly and effectively to the mineral supply and land management requirements of the Congress and other Federal agencies. The broad spectrum of information resulting from NAMRAP studies is made available to users in the form of published comprehensive reports and folios that include geologic, geochemical, geophysical, and mineral resource maps and interpretative text. These studies identify areas that have notable potential for the occurrence of undiscovered mineral deposits and merit further evaluation. Where possible, this information is carefully integrated to create probabilistic estimates of the number, type, size, and grade or quality of mineral resources remaining to be found in any particular geologic terrane.

USGS scientists are pioneering the development and testing of new techniques to quantify undiscovered mineral resources. Data are collected, synthesized, and interpreted using mineral deposit models developed by USGS scientists for the occurrences of known mineral deposits throughout the world. Mineral resource assessments resulting from the larger scale studies described below are characterized by: (1) identification of the types of mineral deposits that are known or suspected to occur within the study area; (2) identification and delineation of tracts expected to contain these deposits; and (3) where data are adequate, by probabilistic estimates of the numbers, types, sizes, and grades of undiscovered deposits in the tracts. In cases where sufficient geophysical data are available, tracts may be projected beneath covering rocks and sediments. Probabilistic estimates of undiscovered deposits usually are based primarily upon a combination of: (1) evaluation of the area by experienced mineral deposit geologists, (2) frequency distributions of deposits known in similar areas elsewhere, and (3) target identification.

Investigations undertaken by NAMRAP are organized into two major projects: the Conterminous U.S. Mineral Resources Assessment Project (CUSMAP), and the Alaskan Mineral Resources Assessment Project (AMRAP). These investigations provide mineral resource information at various appropriate levels of detail. Scales of study are dependent upon a number of variables, including: (1) the geologic complexity of an area, (2) the quantity and quality of available information, (3) logistical costs, and (4) the nature of legislative or administrative requirements. Studies are conducted at four interactive levels of progressively more detailed investigation, which commonly focus on areas of high mineral potential identified by less detailed studies at small scales. They are: Small scale Compilation and Reinterpretation (Level I); Assessments of Federal Management Areas and States (Level II); Systematic Assessments of Quadrangles and Federal Management Areas (Level III); and Assessments of Special Interest Areas (Level IV). The scale and size of the areas studied for each level are shown in the table below.

Level	Scale	Size of Area studied
I	<1:1,000,000	>100,000 sq. mi.
II	1:250,000 to 1:1,000,000	1,000 to 100,000 sq. mi.
III	1:100,000 to 1:250,000	1,000 to 10,000 sq. mi.
IV	1:25,000 to 1:100,000	<1,000 sq. mi.

Small scale Compilation and Reinterpretation (Level I)

Level I studies are conducted at very small scales, typically less than 1:1,000,000. These studies generally cover areas of more than 100,000 square miles; many areas exceed 500,000 square miles. Level I studies produce reports and maps of the Nation's mineral resources at scales appropriate for States, groups of States, subcontinents, and continents. These studies rely exclusively on existing geological, geochemical, geophysical, and remote sensing data, including the results of completed, more detailed studies of smaller areas at levels II, III, and IV. The data are examined to develop and delineate metallogenically significant geologic units. Mineral resource investigations of areas that have been the subject of level I studies are limited to: (1) identification of types of deposits that are known or suspected to occur within the region, and (2) identification and delineation of preliminary tracts of land that are permissive for particular types of deposits. These tracts are based upon the nature and extent of the metallogenic units and may be considerably modified by more detailed studies. Undiscovered resources cannot be quantified at this scale of study. The precision of level I studies reflects the extent and accuracy of the existing data on which such a study is dependent. Level I studies commonly include recommendations for further investigations.

Assessments of Federal Management Areas and States (Level II)

Level II studies are conducted at small scales, typically between 1:250,000 and 1:1,000,000 and usually cover areas of 1,000 to 100,000 square miles. Examples include mineral resource assessments of National Forests (NF), BLM Resource Areas, National Parks, Wildlife Refuges, and entire States. Assessments typical of this level draw mainly on existing information, including completed levels III and IV studies, and may be supplemented by limited field investigations to resolve particular problems. Undiscovered resources may be quantified, but individual targets rarely are identified unless the assessment is based upon more detailed levels of study. The precision of mineral resource assessments conducted at this level reflects the extent and accuracy of the existing data on which such a study is largely dependent.

The process of mineral resource assessment of USFS lands has undergone a major shift in emphasis from Level IV studies of wilderness-related areas to Level II studies of entire national forests. The USGS conducts work on entire forests at the request of the USFS to assist that agency with its land and resource management plans required by the Wilderness Act of 1964, the Renewable Resources Planning Act of 1974 and the National Forest Management Act of 1976. The plans must include a determination of the potential for future mineral discovery and development, access requirements for mineral exploration and development, and the probable effect of renewable resource planning direction on mineral resource discovery and supply and Forest plans are revised on a 10-year cycle. In order for plans to contain cost efficient management direction, timely and accurate mineral resource information must be available. The USGS, in cooperation with the USFS, has completed mineral resource assessments of the San Isabel NF in Colorado, the Black Hills NF in South Dakota and Wyoming, the Challis NF in Idaho, and the Chugach NF in Alaska. Comparable mineral resource assessments were begun for the White River NF in Colorado in FY 1988, the Tongass NF in Alaska in FY 1989, and the Coronado NF in Arizona and New Mexico in FY 1990. The San Isabel and Black Hills assessments were evaluated at a joint USGS/BOM/USFS workshop in 1986. The workshop produced an interagency agreement for coordinating mineral surveys on USFS lands. Subsequently, a priority list was developed of 18 National Forests comprising about 60 million acres for which minerals issues are critical to the development of management plans.

Statewide and affiliated insular area mineral resource assessments are underway in Nevada, West Virginia, and Puerto Rico in FY 1990 and FY 1991. The Nevada and West Virginia assessments are in cooperaiton with the BOM and the States and the Puerto Rico assessment is in cooperation with the Puerto Rican Department of Natural Resources.

The NAMRAP program also will include Level II mineral resource assessments of BLM resource areas to assist the BLM in meeting the inventory, land-use planning, and management requirements of the Federal Land Policy and Management Act of 1976 (FLPMA). This activity will increase as the number of assessments of BLM wilderness study areas declines. The first assessment probably will be conducted on either the Roswell, New Mexico, or the Caliente, California Resource Area, subject to availability of funds and pending further discussions of priorities with BLM personnel.

Systematic Assessments of Quadrangles and Federal Management Areas (Level III).

Level III studies are primarily field investigations conducted at intermediate scales, usually between 1:100,000 and 1:250,000, and generally focus on areas of 1,000 to 10,000 square miles. Mineral resource assessments typical of level III incorporate the results from any completed level IV studies, but otherwise are based upon extensive new field investigations that apply appropriate geological, geochemical, geophysical, and remote sensing techniques.

Level III studies are designed to balance cost, rate of coverage, comprehensiveness of investigation, and assessment precision and reliability. Undiscovered resources commonly are quantified and the precision of mineral resource assessments is substantially higher than that of levels I and II, reflecting the extensive field work of level III studies. Consequently, individual mineral deposit targets may be identified, but only rarely are studies sufficiently detailed to permit areas to be classified as unmineralized.

The USGS is using level III studies of two- and three-degree quadrangles at 1:250,000 scale to systematically assess the mineral resources of the United States, often as cooperative projects with State. Quadrangle studies at this scale cover 6,500 to 7,500 square miles, depending on their location, and require about three field seasons of study. Quadrangles selected for level III investigations are chosen only from among a group of about 25 quadrangles for which pre-field studies have been completed. Pre-field studies include compilation and interpretation of existing data, and an initial mineral resource assessment; they require 4 to 6 months to complete, involve 6 to 8 team members, and provide the required first phase of research necessary for quadrangle studies. Pre-field studies will be completed in FY 1990 for the following quadrangles: Charleston, West Virginia; Sandpoint, Washington/Idaho; and Winnemucca, Nevada.

In FY 1991, the Geological Survey will formally coordinate its work on six quadrangles in the conterminous United States with the geological surveys of Arkansas, Georgia, Idaho, Illinois, Indiana, Kansas, Kentucky, Missouri, Minnesota, Nevada, South Carolina, and Utah. In Alaska, coordination of work in several quadrangles will continue with the Alaska Division of Geological and Geophysical Surveys. As the number of assessments of BLM wilderness study areas declines, it should be possible to restart work on the Cordova quadrangle in FY 1990. No new quadrangles have been started since FY 1986 in order to meet the mandated deadline for completion of mineral assessments of proposed BLM wilderness areas. Most Level III studies have been deferred since then due to the required assessment of nearly 13 million acres of BLM wilderness study areas by 1991. Emphasis will then shift to meet a growing need to provide mineral resource assessments of large tracts of Federal lands, such as BLM Resource Areas and National Forests.

Folios of 1:250,000-scale quadrangles published or in press as of the end of FY 1990

Alaska

Ambler River
Anchorage
Baird Mts.
Bendeleben
Big Delta
Blying Sound
Chandalar
Chandler Lake
Chignik
Circle
Goodnews Bay(s)
Hagemeister Island
Healy
Iditarod
Karluk (NW corner)
Ketchikan
Killik River
Lake Clark
McCarthy
Medfra
Mount Hayes
Nabesna
Petersburg
Phillip Smith Mountains
Port Moller
Prince Rupert
Seward
Simeonof Island
Solomon
Stepovak Bay
Survey Pass
Sutwik Island
Talkeetna
Talkeetna Mountains
Tanacross
Ugashik
Valdez
Wiseman

Conterminous U.S.

Ajo, AZ
Butte, MT
Challis, ID
Charlotte, NC, SC
Choteau, MT
Delta, UT
Dillon, MT, ID
Glens Falls, NY, NH, VT
Iron River, MI, WI
Lewiston, VT, NH, ME
Lukeville, AZ
Medford, OR
Pueblo, CO
Richfield, UT
Rolla, MO
Sherbrooke, VT, NH, ME
Springfield, MO
Silver City, AZ, NM
Tonopah, NV
Walker Lake, CA, NV
Wallace, ID, MT

Quadrangles (1:250,000) under study and in preparation as of the end of FY 1990

Alaska

Bethel
Bradfield Canal
Cordova (restarted in FY 1990)
Craig
Dixon Entrance
Gulkana
Juneau
Lime Hills
Livengood
Middleton Island
Mount Katmai
Naknek
Taku River

Conterminous U.S.

Greenville, GA, SC
Hailey, ID
Harrison, MO, AR
International Falls, MN
Joplin, MO, KS
Paducah, IL, IN, KY, MO
Redding, CA
Reno, NV
Roseau, MN

The USGS, in conjunction and close coordination with the BOM, is conducting mineral resource assessments of numerous unstudied public roadless and RARE II lands in Idaho. The work started in FY 1989, and by May a 200-page report containing 14 large color maps was completed jointly by both agencies. Shortly after completion of this report, teams of USGS geologists, geochemists, and geophysicists began regional field work to collect some of the necessary new data identified in the report. Geochemical field work is continuing into early FY 1990, and laboratory analysis of samples is underway. The USGS portion of the joint work plan for FY 1990 will focus on the next step, which is the investigation of the geology, geochemistry, geophysics, and known mineral deposits as they pertain to, and are indicative of, the potential for undiscovered mineral deposits in the individual study areas.

Assessments of Special Interest Areas (Level IV)

Level IV studies are conducted at large scales, usually in the range of 1:25,000 to 1:100,000, and typically at scales of 1:63,360 or larger. Most areas are small, containing less than 1,000 square miles, and commonly containing less than 200 square miles. The resulting mineral resource assessments typically are based on large scale field investigations and are characterized by delineated tracts that commonly are smaller than those of levels II and III studies. Level IV studies are sufficiently detailed to confidently classify areas as nonmineralized. Estimates of numbers of undiscovered deposits are usually based primarily upon the identification of mineral deposit targets, and the precision of the estimates is typically greater than for areas studied at levels II or III. However, the small size of some areas may preclude the estimation of numbers of undiscovered deposits due to statistical fluctuations characteristic of small samples.

Level IV studies commonly produce mineral resource assessments of small, typically irregularly shaped tracts of land to meet short deadlines and to satisfy statutory requirements for decisions such as wilderness suitability. At present, most Level IV studies are resource assessments of BLM lands for which a preliminary recommendation of wilderness suitability has been made. Assessments of these lands are mandated by FLPMA. This Act established a wilderness review process on BLM-managed lands and required that the USGS and the BOM conduct mineral resource assessments of each area proposed by the Secretary of the Interior for wilderness designation. The BLM has informed the USGS and the BOM that last minute changes in wilderness suitability for some areas should be expected as preliminary recommendations move forward for decisions by the Secretary. According to FLPMA, the results of all mineral assessments must be available prior to the Secretary's wilderness recommendations to the President in October 1991. However, unscheduled additions of BLM areas by the Secretary are possible through 1992. The duration of individual BLM projects is generally three years, two for field work and the third for report preparation and printing. Reports on the mineral resources of these wilderness study areas include assessments by the USGS of the potential for the occurrence of undiscovered mineral deposits, with contributions on identified deposits by the BOM. Interagency program operations are managed and closely coordinated through a memorandum of understanding that established the roles of the three agencies. By the end of the assessments in 1991, nearly 500 areas aggregating about 13 million acres of BLM wilderness study areas and instant study areas in 10 western States will have been assessed and evaluated.

In FY 1990, the NAMRAP program is expected to provide the following support to BLM wilderness assessments:

- Complete joint reports, with BOM, on 1.89 million acres.
- Continue field studies on 0.4 million acres.
- Begin studies on 0.2 million acres of designated wilderness, including an unknown number of acres/areas that have yet to be identified.

In FY 1991, as BLM and the Department make final wilderness recommendations, the mineral assessment program must maintain the flexibility to provide field-based studies for BLM wilderness recommendations and input concerning wilderness legislation, without a known forecast for the specific workload. An annual report will be prepared summarizing all mineral resource assessment activities. The report will also summarize Congressional wilderness activity and present the statistics for acreages and numbers of areas studied.

Preparation of State briefing books, which summarize the results of mineral resource assessments of areas classified by BLM as suitable for wilderness designation, and also include summaries of available mineral resource information for nonsuitable areas will continue. Mineral assessments of nonsuitable areas were not required; however, many of these areas have been proposed for wilderness classification in early versions of wilderness bills for BLM lands. The briefing books for Arizona, California, New Mexico, and Idaho have been completed; Nevada, Wyoming, and Colorado will be completed in FY 1990; and Oregon, and Utah will be completed in FY 1991. Nonetheless, there is a continuing crucial need for field work for detailed level IV mineral resource assessments of nonsuitable wilderness study areas and other lands prior to their classification as wilderness. In FY 1989, for example, over 20 million acres of lands managed by the BLM, USFS, NPS, and FWS were included in wilderness bills. Detailed mineral resource assessments were available for only about 4 million acres of these lands. Consequently, enormous quantities of undiscovered strategic and critical minerals and other mineral resources essential to our national prosperity and security may be withdrawn from exploration, discovery, and development. The NAMRAP program will continue to conduct level IV mineral assessments of these lands on an ad hoc basis as the land-managing agencies request assistance with their legislative and legal land planning processes and as funds become available.

Recent Accomplishments

- Approximately 460 reports have been published on the geology, geochemistry, geophysics, and mineral resources of more than 13 million acres of land in about 430 BLM wilderness study areas.
- Mineral resource assessments of BLM wilderness study areas have delineated previously unknown areas of high potential for the occurrence of undiscovered mineral deposits. One example is the Golden Valley wilderness study area in the California Desert. This area has no mines or mineral production, but mineral exploration activity has increased as a result of the mineral assessment, which found high potential for occurrence of undiscovered deposits of gold and silver, and moderate potential for undiscovered deposits of lead, zinc, tungsten, and geothermal energy. Another example is the Ragged Top wilderness study area in Arizona, which may contain a buried porphyry copper deposit in its western half. The southwest quarter of this study area was classified as having high potential for occurrence of undiscovered deposits of gold, silver, lead, vanadium, and barium, and possibly for molybdenum, copper, and zinc. Other parts in the western half of the area were found to have moderate potential for these same commodities.
- Innovative Geographic Information System (GIS) methods of manipulating data, preparing maps, and facilitating the final mineral resource assessments have been used in the Butte and Dillon 1:250,000 scale quadrangles in Montana. GIS techniques are an integral part of State cooperative studies with Illinois, Indiana, Kentucky, and Missouri in the Paducah quadrangle; Utah in the Delta quadrangle; Idaho in the Hailey quadrangle; and Nevada in the Reno quadrangle.
- Compilation, integration, and interpretation of basic geoscientific data during the pre-field study of the Tooele 1:250,000-scale quadrangle identified previously unrecognized topaz-bearing rhyolites and the sporadic occurrence of beryllium minerals. Integration of these data with mineral deposit models suggests that undiscovered deposits of lithium, beryllium, fluorine, and perhaps of gold, occur beneath shallow alluvium in the Great Salt Lake Desert.
- Mineral resource assessments of the Harrison, Missouri and Arkansas, and the Joplin, Missouri and Kansas, 1:250,000 scale NAMRAP quadrangles have identified new areas favorable for the occurrence of undiscovered Mississippi Valley-type (MVT) deposits of lead and zinc, and possibly of copper, cobalt, and nickel. Using this information in concert with other criteria, the Harrison CUSMAP team identified a northwest-trending area in Douglas and Ozark Counties, Missouri, as having high potential, with a moderate degree of certainty, for MVT deposits, and an area in eastern Boone and western Marion Counties, Arkansas, as having high potential with a low degree of certainty. The Joplin CUSMAP team identified an area of high potential for MVT deposits in the northeast part of the quadrangle

and additional high potential areas northwest and north of Oswego, Kansas. Two other areas also were discovered that have moderate potential for occurrence of MVT deposits in the quadrangle.

o Two exciting innovative geochemical techniques tested during assessment of the International Falls and Roseau, Minnesota, quadrangles represent major new tools to assist minerals exploration in extensive areas covered by glacial sediments. Chemical analyses employing a specially developed enzyme leach of soils offers the best hope of detecting trace element dispersion patterns associated with mineral deposits in these covered areas. Moreover, a pilot study of the use of soil gases for detection of mineralized bedrock beneath 20 to 40 feet of glacial overburden successfully identified two buried zones of disseminated sulfide minerals and promises to be an additional valuable exploration tool.

o A probabilistic quantitative mineral resource assessment of undiscovered mineral deposits for selected mineral deposit types has been completed for the Chugach National Forest, Alaska. Published as USGS Open-file report 89-345, the assessment gives estimates of undiscovered metal endowment by planning unit, commodity, and deposit type. Assessed commodities include gold, silver, copper, lead, zinc, manganese, and iron. The estimated gold endowment is perhaps the most significant; the median value of this estimate is approximately equal to a year of Alaskan gold production.

o A map of the Dugway mining district, Utah, was recently published as part of the Delta 1:250,000-scale quadrangle study during which a high potential for disseminated gold deposits was identified. Interest in exploration for these deposits is considerable.

o The first year of new mineral resource investigations (Level III) of geologic terranes containing unstudied public roadless and RARE II lands was completed in conjunction and coordination with the BOM. This first phase of the investigations accomplished (1) the identification of those terranes having highest priority for study according to the principal selection criteria outlined above and the need for timely minerals information in support of pending major land use planning decisions; (2) a thorough review and compilation of available mineral resource information for highest priority terranes, including identification of areas where mineral resource data are lacking or are inadequate for a comprehensive modern mineral resource assessment; (3) the development of a methodology for systematic integration of efforts by USGS, BOM, and any State geoscience agencies to provide the most accurate, efficient, and cost effective mineral resource investigations possible for these areas; (4) the preparation of a detailed work plan to collect, interpret, and publish new mineral resource data and derivative mineral resource assessments of the terranes studied; and (5) preliminary field and laboratory investigations of selected highest priority areas.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate
Quadrangles published or scheduled for publication (cumulative)	59	59	59	59
Quadrangle folios in preparation	12	12	12	12
Quadrangle field studies underway (incl. new starts)	9	10	10	10
Public meetings	1	1	1	1
New starts	0	0	0	0
Topical projects				
Areal mineral resources assessments	22	19	19	22
Areal energy resources assessments	7	7	7	7
Framework or process studies	7	7	7	7
Exploration geochemistry	13	10	10	13
Exploration geophysics	24	21	21	24
Isotopic and radiometric studies	9	9	9	9
Stratigraphic correlation studies	6	6	6	6
USGS-State coop. studies underway	5	5	5	5
USGS-State coop. studies initiated	3	3	3	3
Statewide and affiliated insular area assessments	1	3	3	3
Special-interest-area assessments	134	101	101	20
Pre-field studies completed or sch. for completion (cumulative)	25	32	32	28
National Forest assessments	2	3	3	4
BLM Resource Area assessments	0	0	1	1

Decrease for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	24,712	23,212	-1,500
FTE	379	379	--

Some mineral resource assessments of public roadless and RARE II lands will be suspended in FY 1991. Data collected to date will be made available to the Forest Service and other land managers.

Distribution of change by object class:

The object class detail for the proposed $1,500,000 decrease is as follows:

	Amount
Travel and Transportation of Persons- - - - - -	$ 200,000
Transportation of Things - - - - - - - - - - - -	100,000
Communications, Utilities, and Misc. Charges - - - - - - - - - - - - - - - - - -	100,000
Printing and Reproduction - - - - - - - - - - - -	300,000
Other Services - - - - - - - - - - - - - - - - - -	600,000
Supplies and Materials - - - - - - - - - - - - -	200,000
Total - - - - - - - - - - - - - - - - - -	$1,500,000

Strategic and Critical Minerals

Objectives: To provide comprehensive information on domestic and world resources of nonfuel minerals that are essential to a strong national economy and defense; to develop systems to store, analyze, and present this information in forms needed for mineral policy planning; and to develop international expertise in strategic and critical minerals to assist in the location and development of adequate and dependable supplies of these commodities.

Base Program: Mineral resource information is gathered via research projects on mineral deposits, statistical analysis of information, and environments of mineral deposition. This is accomplished by 1) maintaining a group of mineral experts, commodity geologists, statisticians, and mineral economists who perform research on strategic minerals, and 2) by conducting mineral resource research projects. Along these lines, research projects have been directed toward interdisciplinary evaluations to delineate areas that may contain concealed mineral deposits in broad geologic regions of the United States. The regions under study are the geologic basins of the eastern United States that were formed during the Mesozoic Era (between 240 and 63 million years ago), the buried Precambrian (more than 570 million years old) and Paleozoic (between 570 and 240 million years old) rocks of the midcontinent region, and, most recently, the faulted and covered rocks of Alaska and the Basin and Range region in the western United States. Significant mineral deposits are likely to occur in such regions, but exploration has been hampered because the deposits are covered by young basin fill, glaciers and glacial deposits, dense vegetation, muskeg (bogs), lava flows, or water.

Information regarding the geologic, exploration, and development aspects of mineral resources is provided to the public through Minerals Information Offices (MIOs). Each MIO provides access to the Survey's Mineral Resource Data System (MRDS), a computer database that contains mineral resource information for deposits and mining districts worldwide. These offices are colocated with the Bureau of Mines in Washington, D.C.; Reno, Nevada; Spokane, Washington; and Tucson, Arizona. They are open to the general public five days a week and provide an easily accessible source of mineral resource information.

In FY 1989, the program began staffing a Center for Inter-American Mineral Resource Investigations in Tucson, Arizona. This Center will compile, analyze, and interpret information on mineral resources and mineral resource exploration activities in Latin America and Canada. The information will be released to the public via publications and the Minerals Information Offices.

The Strategic and Critical Minerals program is a part of the implementation of the President's National Materials and Minerals Plan of April 1982. Research in support of this program is designed to facilitate planning and development by industry, and to provide a basis for national minerals policy. The focus of the program is on essential minerals needed for industrial growth and national defense which are presently known to be in short supply in this country.

FY 1990 activities include:

o Assist lead countries in completion of summary reports on tungsten (Canada) and vanadium (South Africa) and carry out exchange of commodity records for these commodities as well as for zirconium for the International Strategic Minerals Inventory. Circulars 930-G and 930-H on titanium and natural graphite, respectively, were recently published. Reports on lithium, niobium, and tantalum are being prepared. These circulars are the most recent in a series of summary reports on mineral commodities compiled by the International Strategic Minerals Inventory. Continue cooperative assessment of undiscovered lode tin resources in conjunction with an inventory of identified tin resources.

o The Center for Inter-American Mineral Resource Investigations will compile, interpret, and publish mineral resource information for Bolivia and Venezuela. The data will be stored in the Mineral Resource Data System.

o Initiate a mineral resource assessment of the Altiplano and Cordillera Occidental areas of Bolivia with funding provided by the U.S. Trade and Development program of the Department of State.

o Continue working with the Government of Venezuela on mineral resource surveys of Precambrian shield rocks in that country.

o Continue a recent project on platinum group elements (PGE) with a published color map that includes a data base of deposit locations. This project integrates information on deposit models, grade and tonnage, and contained-metal with a geochemical evaluation to provide knowledge of PGE distribution, especially in deposit types or geologic environments not previously associated with PGE resources.

FY 1990 and FY 1991 activities include:

o Continue the study of the mineral potential of the buried basement rocks and overlying sedimentary rocks of the midcontinent of the United States. This area has the potential for large undiscovered deposits of nickel, cobalt, lead, zinc, iron, and numerous other mineral commodities. These rocks are highly productive where exposed in southern Canada and the northern United States but are covered by a few feet to thousands of feet of younger deposits over a wide area in the midcontinent. This terrane may have substantial undiscovered mineral resources, but exploration and development of them will require a far better understanding of the areal geology and the application of concepts and tools that are being developed. This work is done in cooperation with fifteen State Geological Surveys.

- Continue a geologic environment analysis of mineral resources in the Basin and Range Province. This study will emphasize methods of geophysical analysis in mineral resource assessment whereas the midcontinent study has been a testing ground for innovative geochemical assessment analysis. Assessment of the potential for concealed deposits of strategic and critical minerals in young basins in the Basin and Range of Nevada and Arizona requires knowledge of numerous deposits in the surrounding well exposed ranges. In addition, information on the development and application of mineral deposit and paleohydrologic models, and the testing and refinement of innovative geochemical and geophysical exploration technologies that can detect the presence of concealed deposits must be obtained.

- Continue providing services of mineral resource commodity specialists. These specialists will track, compile, and interpret geologic data as they relate to mineral commodities. Emphasis is on strategic minerals.

Some recent accomplishments of the program are:

- Published Bulletin 1776, "Studies of the Early Mesozoic Basins of the Eastern United States." This is a summary of research on the Mesozoic sedimentary and igneous rocks and related mineral resources of the basins in the eastern United States.

- Contributed information to "Mineral Commodity Summaries, 1989," to the Secretary's annual report "The Mineral Position of the United States - 1988," and to the "Strategic and Critical Materials Report to the Congress."

- Completed a demonstration of the use of airborne geophysical techniques along the Getchell trend of mineral deposits in north central Nevada. The purpose of the research was to show how geophysics can be used to identify geologic structures associated with mineralized rock that are covered by younger geologic materials. The results of the demonstration were presented in a one-day public symposium in Reno, Nevada, in January 1989.

- Opened Mineral Information Offices (MIOs) in Tucson, Arizona, and Spokane, Washington. The MIO in the Department of the Interior building in Washington, D.C., spotlighted gold and the rare-earth elements as special information highlights. Lectures and demonstrations regarding these mineral commodities were well attended. The Mineral Resources Data System (MRDS) was integrated with a new program entitled "ROCS." The ROCS program was developed at the USGS and operates on a MacIntosh computer. The program is user-friendly and allows anyone visiting a MIO access to mineral resource information around the world.

- o Opened the Center for Inter-American Mineral Resource Investigations (CIMRI) in Tucson, Arizona. This center is presently staffed by an interdisciplinary group of geoscientists with expertise on the mineral resources of Central America and South America.

Selected program outputs are:

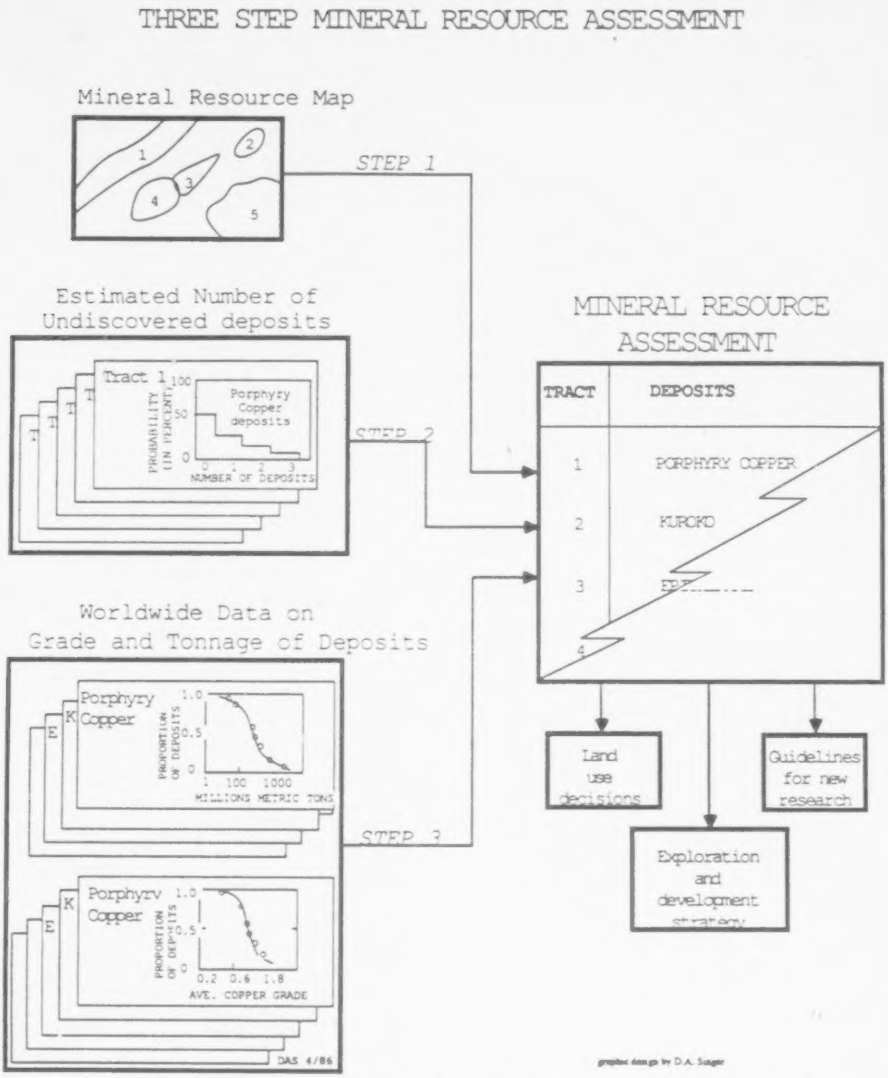
	FY 1989 Actual	FY 1990* Adjusted Approp.	FY 1991 Base	FY 1991 Estimate
Projects:				
Mineral commodity geology	29	7	7	7
Mineral data files and statistical techniques	10	2	2	2
International mineral deposit data and cooperative resource studies	2	5	5	5
Mineral assessment of domestic geologic provinces	18	10	10	10
Mineral-deposit genesis and laboratory techniques	46	15	15	15
Contract administration of remaining outstanding government mineral-exploration loans	1	0	0	0

*This table reflects an internal restructuring of the projects within this program that takes place in FY 1990. This restructuring includes combining projects into comprehensive multidisciplinary study units that integrate the research of different organizational entities more effectively.

Development of Assessment Techniques

Objectives: To develop concepts and techniques that improve abilities to find mineral deposits, evaluate mineral resources, and understand the geochemical processes that occur at or near the Earth's surface.

Base Program: The Development of Assessment Techniques Program conducts basic and applied research on the origin of mineral deposits, their geologic, geochemical, and geophysical expressions, and the factors that control the dispersion of chemical elements in the surficial environment. To accomplish these goals, multidisciplinary field and laboratory studies examine the processes which form mineral deposits, the ways in which mineral deposits may be detected, and develop the technologies which allow mineral resources to be quantitatively estimated. The results apply directly to the quantitative estimation of the Nation's mineral resources and the location of sources for strategic and critical minerals. The program also directly supplies data and technologies needed by other Federal agencies involved in land use planning and regulation as well as by private sector groups that are concerned with natural resource development and environmental protection (see Figure G-12).


THREE STEP MINERAL RESOURCE ASSESSMENT
Mineral Resource Map
1
2
3
4
5
STEP 1
Estimated Number of Undiscovered deposits
Tract 1
T
PROBABILITY (IN PERCENT)
100
50
0
Porphyry Copper deposits
0 1 2 3
NUMBER OF DEPOSITS
STEP 2
Worldwide Data on Grade and Tonnage of Deposits
Porphyry Copper
K
E
PROPORTION OF DEPOSITS
1.0
0.5
0
1 100 1000
MILLIONS METRIC TONS
STEP 3
Porphyry Copper
AVE. COPPER GRADE
0.2 0.6 1.8
DAS 4/86
MINERAL RESOURCE ASSESSMENT
TRACT
DEPOSITS
PORPHYRY COPPER
KUROKO
EPI
Land use decisions
Guidelines for new research
Exploration and development strategy

graphic design by D.A. Singer

Figure G-12.--An illustration showing the three-step process used in making a mineral-resource assessment. Critical steps involve using mineral deposit models, statistical probability modeling, and integration of geologic, geochemical, and geophysical data.

The program activities are divided into three areas. The first concerns ore-forming processes and entails multidisciplinary field and laboratory studies of the factors that control mineral deposition. The second addresses mineral exploration and resource assessment methods and includes geologic, geochemical, and geophysical work on the expressions of mineral deposits, development of new tools to locate mineral deposits, and the application of new techniques for making quantitative mineral resource assessments. The third expands the application of techniques that have traditionally been applied to understanding the geochemical distribution of elements around mineral deposits to broader environmental issues such as the dispersion of chemical pollutants or the degradation of the environment.

As in the past, results of this work continue to be made available in a wide variety of ways. New developments concerning the distribution and identification of undiscovered deposits are used by the Strategic and Critical Minerals and the National Mineral Resources Assessment programs through direct transfer of information to scientists carrying out investigations within those programs. Additionally, the results of geologic, geochemical, and geophysical studies are released to the public through a variety of widely available publications, open meetings, and workshops.

The FY 1990 and FY 1991 program will include:

o The acquisition and interpretation of fundamental geologic, geochemical, and geophysical data that is needed to understand how mineral deposits form and how their resources can be evaluated. This work will also provide the private sector with important information on features that control the distribution of mineral deposits.

o The development of new techniques that are needed for making quantitative mineral resource assessments. This will include the construction of mineral deposit models that are directly applied to work in the National Mineral Resources Assessment and the Strategic and Critical Minerals programs.

o The development of new detection techniques that are used to assess mineral resources and to explore for mineral deposits. This includes field and laboratory studies of the geochemical dispersion of trace and minor elements around deposits and the geophysical and remote sensing expression of mineral deposits.

o Development of fundamental analytical and laboratory techniques necessary to recognize the chemical anomalies that are associated with mineral deposits and with other types of natural and manmade perturbations to the Earth's environment.

o Basic environmentally oriented geochemical studies of how chemical elements move through the environment and how geochemical and remote sensing techniques can be used to identify the physical changes of the Earth's surface that occur around concentrations of toxic chemicals (see Figure G-13).

MERCURY

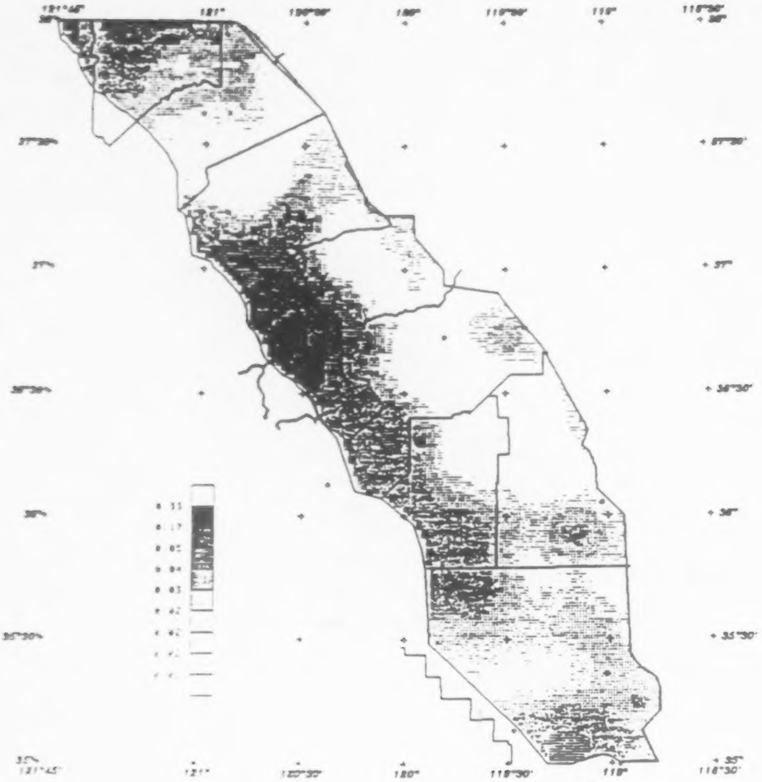

121°45'
121°
120°30'
120°
119°30'
119°
118°30'
38°
37°30'
37°
36°30'
36°
35°30'
35°
0.33
0.17
0.05
0.04
0.03
0.02

Figure G-13.--Map showing mercury content of soils, in the San Joaquin Valley, California. This information can be used to explore for gold deposits which also commonly contain mercury. It also can be used to identify sources of mercury pollution that threaten the environment.

Recent significant accomplishments of the program include:

- **A cooperative study with private industry that has produced a comprehensive genetic model for the lead/zinc/copper/silver/gold deposits that occur in the Gilman district of Colorado and, thereby, provides new information on how those deposits formed, how they should be explored for, and how resources of this kind of deposit should be evaluated.**

- **Recent field studies that have reinterpreted the structural features that control the distribution of some major gold deposits in north central Nevada and in southeastern California and consequently generates new concepts that may guide the exploration for and the mineral resource assessment of undiscovered deposits of this type.**

- The development of a prototype process that applies geographic information system (GIS) computer technology to a 1:250,000 scale quadrangle in Utah. The work integrates geologic, geochemical, and geophysical data with mineral deposit model information to define areas that are likely to host undiscovered mineral deposits.

- A variety of sophisticated chemical studies that use the isotopes of sulfur, oxygen, rhenium, and osmium to define the genetic controls on zinc/lead, copper/zinc/lead, and platinum/palladium deposits. The results indicate which geologic environments may host additional similar deposits and thereby affect the exploration for or mineral resource assessment of deposits of these kinds.

- A "recursive terracing" technique has been developed to treat geophysical data. This new technique results in maps that emphasize boundaries between dissimilar areas and that are often associated with mineral deposits. These new maps are directly used in making resource evaluations and are used by the private sector in minerals exploration.

- A newly designed electrical-geochemical sampling system is being tested. The system involves passing a strong current between two electrodes that are inserted in the ground. In response to this current, trace elements are moved to and collected at the electrodes. Analyses of the electrode can provide information that ranges from where a buried mineral deposit is located to the detection of hidden sources that are leaking potentially toxic elements.

- A variety of geochemical sampling programs have been developed that use soils and plant material to define metal anomalies. Some of these anomalies are clearly associated with metal deposits and demonstrate the usefulness of these techniques in minerals exploration; other anomalies are associated with chemical pollution and show the applications of these techniques to environmental monitoring.

Selected program outputs are:

	FY 1989 Actual	FY 1990* Adjusted Approp.	FY 1991 Base	FY 1991 Estimate
Mineral deposit models	30	0	0	0
Geochemical exploration techniques	20	0	0	0
Geophysical exploration techniques	16	0	0	0
District and deposit studies	22	0	0	0
Minerals research studies	22	0	0	0
Ore-forming processes	10	10	10	10
Exploration and assessment concepts	0	11	12	12
Environmental processes	0	4	7	7

* This table reflects an internal restructuring of the projects within the DAT program that takes effect in FY 1990. This restructuring includes combining projects into comprehensive multidisciplinary study units that integrate the research of different organizational entities more effectively.

Justification of Program and Performance

Activity: Geologic and Mineral Resource Surveys and Mapping
Subactivity: Energy Geologic Surveys

(Dollar amounts in thousands)

Program Elements		1990 Enacted to Date	1990 Adjusted Approp.	1991 Base	1991 Estimate	Inc.(+) Dec.(-) from Base
Evolution of Sedimentary Basins	$	5271	5200	5337	6587	1250
	FTE-T	101		101	101	0
Coal Investigations	$	7388	7288	7437	6381	-1056
	FTE-T	105		105	105	0
Oil and Gas Investigations	$	5653	5577	5707	4905	-802
	FTE-T	95		95	95	0
Oil Shale Investigations	$	585	577	589	589	0
	FTE-T	9		9	9	0
Uranium & Radon Investigations	$	2116	2087	2146	1872	-274
	FTE-T	43		43	43	0
Geothermal Investigations	$	5949	5869	5983	4939	-1044
	FTE-T	86		86	86	0
World Energy Resources	$	513	506	517	517	0
	FTE-T	8		8	8	0
Total Requirements	$	27475	27104	27716	25790	-1926
	FTE-T	447		447	447	0

Impact of Public Law 99-177

	1990 Enacted to Date	PL 99-177 B.A. Cancellation	1990 Adjusted Approp.
Energy Geologic Surveys	27475	-371	27104

The impact of this reduction on this subactivity will decrease the operating funds for all projects and result in curtailed fieldwork, equipment purchases, and data analyses.

Authorization

3 U.S.C. 31(a)	The Organic Act of 1879 authorizes the Geological Survey to conduct "classification of the public lands and examination of the geological structure, mineral resources, and products of the national domain." The Geological Survey provides basic geologic and geophysical data and information to all Federal and administering agencies for purposes of public land management, including the Bureau of Land Management, Fish and Wildlife Service, Forest Service, and others.
30 U.S.C. 201	The Federal Coal Leasing Amendments Act of 1976 provides that no lease sale may be held on Federal lands unless the lands containing the coal deposits have been included in a comprehensive land use plan. The Act provides that the Secretary is authorized and directed to conduct a comprehensive exploratory program designed to obtain sufficient data and information to evaluate the extent, location, and potential for developing the known recoverable coal resources within the coal lands. The Geological Survey provides data and information from its coal research and field investigations which are useful to the Bureau of Land Management to meet the requirements of the coal leasing program.
30 U.S.C. 1121	The Geothermal Energy Research, Development and Demonstration Act of 1974 provides that the Department of the Interior is responsible for the evaluation and the assessment of the geothermal resource base, including the development of exploration technologies.
42 U.S.C. 4331	The National Environmental Policy Act of 1969 requires that proponents of major Federal actions that significantly affect the quality of human environment consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved.
16 U.S.C. 3141 3150, 3161	The Alaska National Interest Lands Conservation Act of 1980. Section 1001 of the Act requires that the Geological Survey will assess the oil and gas potential of Federal lands north of 68 degrees north latitude, east of the National Petroleum Reserve and west of the Arctic National Wildlife Refuge, and participate in a review of the wilderness characteristics of the area. Section 1008 of the Act authorizes the Secretary to conduct studies, or collect and analyze information obtained by

permittees, of the oil and gas potential of non North Slope Federal lands.

42 U.S.C. 2210b,2231	The Nuclear Regulatory Commission Authorization Act requires the Secretary of Energy to monitor and report to the President and Congress on the viability of the domestic uranium industry. Under a Memorandum of Understanding between the Department of Energy and the Department of the Interior, the Geological Survey provides information on domestic uranium resources to the Energy Information Agency, beginning in FY 1985.
30 U.S.C. 1026	Section 6 of the Geothermal Steam Act Amendments of 1988 requires the Secretary of the Interior to (1) maintain a monitoring program for significant thermal features within units of the National Park System and (2) establish a research program to collect and assess data on the geothermal resources within units of the National Park System with significant thermal features in cooperation with the USGS. Section 8 of the Geothermal Steam Act Amendments of 1988 requires the USGS to conduct a study of the impact of present geothermal development in the vicinity of Yellowstone National Park on the thermal features within the park.

Energy Geologic Surveys are conducted in a series of program's elements to improve the understanding of the nature, distribution, and size of the national endowment of energy related resources as input to be used in the formulation of an effective national energy policy and optimum development of energy resources. The primary objectives and accomplishments of each of these programs are discussed below.

The Evolution of Sedimentary Basins Program conducts intensive multidisciplinary studies of entire sedimentary basins, including such aspects as tectonic framework depositional, chemical, thermal and diagenetic processes occurring in a basin. These studies are fundamental to provide an integrated framework within which subsequent exploration for and evaluation of the Nation's mineral and energy resources can be more successfully completed. Studies with this program provide a basis for understanding a variety of resources in the United States including coal, petroleum, oil shale, and uranium/thorium. Such understanding is obtained through geologic, geophysical, and geochemical studies, construction and maintenance of requisite supporting data systems, and development of methodologies for assessing and exploiting resources in sedimentary terranes.

The Coal Investigations Program provides critical information on the quality and quantity of coal available for development, along with information needed to reduce adverse environmental effects of coal exploitation. A computerized coal resource data system is the information source for a wide range of government, industry, and research needs and inquiries.

The Oil and Gas Investigations Program provides input for nationwide estimates of petroleum oil and gas resources for the development of national energy plans as well as active ongoing research efforts. Research on conventional and unconventional hydrocarbon occurrences provide information about their origin, migration, entrapment, occurrence, quality, and potential uses and about the environmental issues to be considered in exploiting oil and gas.

The Oil Shale Investigations Program is designed to characterize the nature, form, and place of occurrence and behavior of oil shales. The resulting information should lead to improved exploration technology and to better environmental safeguards during extraction, processing, and refining of the oil shales.

The Uranium and Radon Investigations Program is directed at the geologic origin and habitat of ore deposits that yield the uranium occurrence and resource assessment models needed for industry exploration and strategically important data sets, including the maintenance and use of the National Uranium Resources data base which is indispensable for small scale radon mapping.

The Geothermal Investigations Program conducts basic research to describe the nature and estimate the location and magnitude of geothermal resources of the United States and to develop an understanding of the geologic and hydrologic processes and conditions of geothermal systems.

The World Energy Resource Assessment Program's objectives are to provide geologic information and assessments on world energy resources, with particular attention given to oil and gas resources, as they relate to the Nation's energy policy and dependence on foreign energy supply.

A brief description of the accomplishments, workload, and goals for each program follows.

Evolution of Sedimentary Basins (ESB)

Objectives: To provide a multidisciplinary approach to research studies of the evolution and commodities contained within energy-rich sedimentary basins. To integrate surface and subsurface geological, geophysical, and geochemical information for the basin, and to provide the critical data that permits interpretations of the energy and mineral resources potentially present in a basin. Systematic, regional basin analysis provides the primary and basic scientific understanding and information required for the assessment of numerous energy and mineral resources within a single basin, which is a controlling geologic entity for assessment. Studies and knowledge of a variety of sedimentary basin types further provide the basis for comparison and assessments of well to poorly explored basins.

Base Program: The Evolution of Sedimentary Basins (ESB) program is the USGS basic research program in sedimentary rock geology and its approach and scope help distinguish the Bureau's role in energy studies from that of other Federal agencies. ESB is focused on integrated multidisciplinary studies of sedimentary basins which are fundamental, well defined building blocks of the Earth's crust, and as such are important elements of the Nation's geologic framework. In addition, it is the regional settings, geologic histories, and geologic processes within these sedimentary basins that control the occurrence and ultimate value of oil and gas, uranium, oil shale, coal, phosphate, salt, potash, sulfur, and many other economic mineral resources. Resource-focused program elements use the information and insight gained through ESB studies.

Studies of mature onshore basins are designed to lead to a better understanding of geologically comparable frontier offshore basins, where, in comparison, data typically are sparse. Conversely, studies of the processes of present day sedimentation in offshore basins have made valuable contributions to our understanding of the sedimentary geology of ancient onshore basins. In this program element, studies are conducted in a variety of continental and marine basin settings, both ancient and modern. An emphasis is placed on resource accumulation and host rock properties that result from a variety of sedimentary and diagenetic processes (geochemical and rock fabric changes) operating throughout the evolution of any particular basin. Successful understanding and prediction of the occurrence of energy and mineral resources requires an understanding of basin history, including the interaction of tectonics and sedimentation; sediment dewatering and paleohydrologic history; and a wide range of rock-water interaction effects resulting in diagenetic changes and reflecting the migration of fluids of varying composition throughout the existence of the basin.

The specialized studies under this program are coordinated to allow a thorough investigation of the principal controls on resource formation and accumulation and are providing a sound basis for assessing the energy resources of the onshore United States. This is especially significant for frontier areas, such as the Alaskan North Slope Basin, and for the deeper parts of conterminous U.S. basins where exploration has been more limited than elsewhere. More importantly, these investigations permit the Geological Survey to provide the needed background information for more accurate and timely national energy resource assessments in basins of all types.

The program, combining basic and applied research, is composed of:

- Regional stratigraphy and sedimentology in the Santa Maria, Paradox, Illinois, and Eastern Great Basins that define stratigraphic units and their relation to basin tectonic episodes, erosional events, and marine continental transgressions.

- Determinations of sources of sediments and directions of regional transport and migration of fluids including oil and gas and documenting tectonic and volcanic events that may have influenced the emplacement of energy minerals or their source and transport.

- Petrographic and petrologic (classification and study of rocks) analysis of sedimentary rocks and corollary chemical analysis of selected mineral components in order to determine physiochemical changes that have altered the rock during diagenesis or later stages, particularly where such changes are critical to the creation of habitats favorable for the formation of energy and mineral deposits. These investigations are designed also to provide information about the processes (e.g. geochemical changes associated with the carbon cycle) that formed and changed energy and mineral deposits through time.

- Reconstructions of basin geometry and past thermal conditions and hydrologic regime through time, with specific attention given to patterns of subsurface pressures, fluid and gas flow, aqueous geochemistry, compaction and dewatering hydrology, post compaction hydrology, and the influence of ground water flow on the migration and entrapment of resource materials.

- Geophysical studies, using seismic reflection profiles to establish three dimensional information on basin stratigraphy and structure, borehole measurements of rock properties (especially in association with diagenesis studies), and field surveys to identify basement character that may have influenced basin tectonism and sedimentation.

Studies begun or incorporated in this program in FY 1985 on the Anadarko, Appalachian, Powder River, and Alaskan North Slope Basins, to establish their geologic framework were concluded in FY 1989. In FY 1986, studies were also started or redirected in the San Juan and Uinta-Piceance Basins, including subsurface crustal, thermal, and pressure regime evaluations and research on the chemistry of subsurface fluids. This basin contains the largest oil field in the Rockies and the Nation's principal oil shale resources. In FY 1987, similar studies were initiated in the Santa Maria Basin, together with an evaluation of the basin's diagenetic history in relation to reservoir rock properties. The Santa Maria Basin is the site of the Nation's largest recent petroleum discovery in the lower 48 States. These efforts continued in FY 1989. In FY 1989, the program entered a summary, synthesis, and closing out phase in the San Juan, Anadarko, Appalachian, Powder River, and North Slope Basins. Many final reports have been completed and others should be available in FY 1991. After an intensive proposal, selection, and review process in FY 1989 that involved input by geoscientists from industry, States, and the USGS, three basins were selected for initiation in FY 1990. These three new basins are the Paradox Basin of Colorado and Utah, the Illinois Basin of Illinois, Indiana, and Kentucky, and the Eastern Great Basin of Nevada and Utah. Several basins in western Wyoming and the Pacific Northwest were also identified for possible future studies. Pilot studies of these basins are being conducted during FY 1990 to determine their suitability for expansion to full 5-year basin studies in FY 1991 and beyond (see Figure G-14).

Recent accomplishments include:

- Proceedings of a workshop on the Anadarko Basin, which was heavily attended and well received by industry, was published by the Oklahoma Geological Survey.

- For the Anadarko, San Juan, Uinta-Piceance, Central Appalachian, Powder River, and North Slope Basins, a bulletin series has been started to publish research results. All of these reports will deal with topics of regional basin analyses necessary to understanding a basin and the Nation's energy resources. Publication of all six bulletins should be completed in FY 1991.

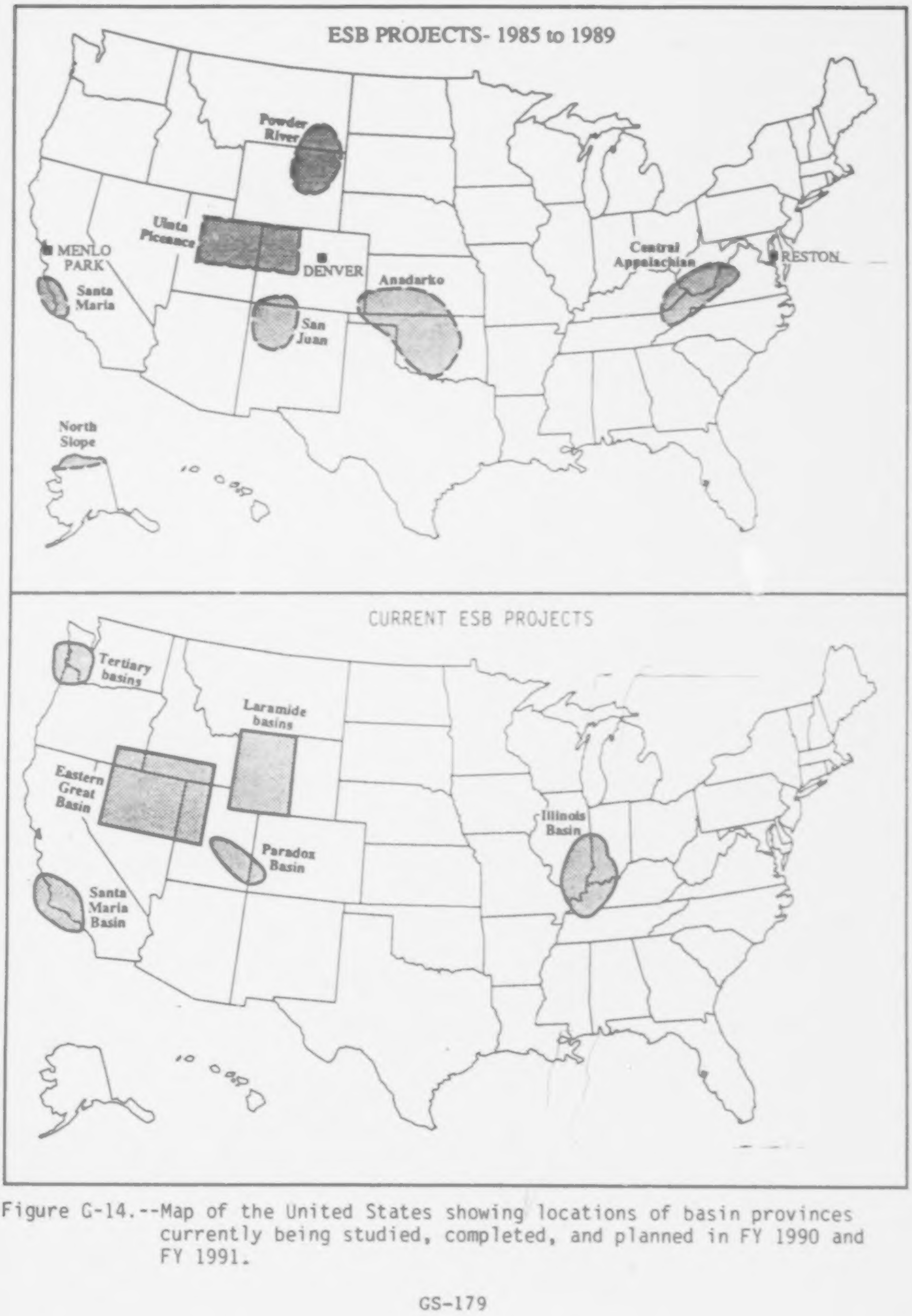

ESB PROJECTS- 1985 to 1989
Powder River
Uinta Piceance
MENLO PARK
DENVER
Santa Maria
Anadarko
San Juan
Central Appalachian
RESTON
North Slope
CURRENT ESB PROJECTS
Tertiary basins
Laramide basins
Eastern Great Basin
Paradox Basin
Santa Maria Basin
Illinois Basin

Figure G-14.--Map of the United States showing locations of basin provinces currently being studied, completed, and planned in FY 1990 and FY 1991.

- A base of subsurface geological data has been computerized for the San Juan Basin. A series of derivative maps for Paleozoic age rock units (between 570 and 240 million years old) has been constructed and published.

- A series of maps on energy and mineral resources of the Wyoming part of the Powder River Basin has been published in cooperation with the Wyoming Geological Survey.

- Highly successful public workshops have been held for all of the basin projects with participants from industry, academia, State geological surveys, and other federal agencies.

- The data gathered and reports generated by the Evolution of Sedimentary Basins program provides a framework and knowledge base which support other programs in this subactivity. Reports and data are made available to others in a variety of report formats, products, and public workshops.

- ESB workshops consist of oral and poster presentations by researchers on ESB basin projects with ample time for questions, answers, and discussion between attendees and presenters. Results of ESB investigations are presented every other year at the USGS public McKelvey Forums on Energy Research. Results are also presented at technical sessions of annual meetings of professional societies. A special technical session on the San Juan Basin was held in 1989 at a regional meeting of the American Association of Petroleum Geologists (AAPG) in Albuquerque, New Mexico and a poster symposium on ESB results will be held at the annual AAPG meeting in San Francisco, California in 1990. Small independent oil companies use the results of these studies in the development of their exploration strategies.

- Expansion of the Core Research Center and Library facility in Denver which is used extensively by industry, academia, and government agencies. This core facility is the Nation's largest and primary center for the study of cored rock relevant to mineral and energy resources. Considerable core of sedimentary rock containing metal and energy minerals from a variety of basins is in the collection. The Core Research Center is also the repository for cores obtained in the joint NSF-USGS program on Deep Observation and Sampling of the Earth's Continental Crust (DOSECC). Personnel from the Core Research Center are responsible for processing cores on site immediately after they are collected, using a sophisticated, custom designed and built mobile laboratory and core processing facility. The Center moved to improved facilities on the Denver Federal Center in FY 1989. In addition to the extensive use by USGS scientists, yearly usage by non-USGS researchers is in excess of 800 user days/yr. and increasing.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate
Components of Basin Analyses				
Structural and stratigraphic framework studies	6	6	5	5
Thermal and fluid pressure history studies	4	4	4	4
Diagenesis and rock water interaction studies	4	4	4	4
Geochemical studies	3	3	4	4
Sedimentologic studies	6	6	4	4
PaleohydroLogy studies	1	1	1	1
Commodity and Seismic Data Bases	0	0	0	2
Federal/State/University Investigations	0	0	0	2

Increase for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	5,337	6,587	+1,250
FTE	101	101	--

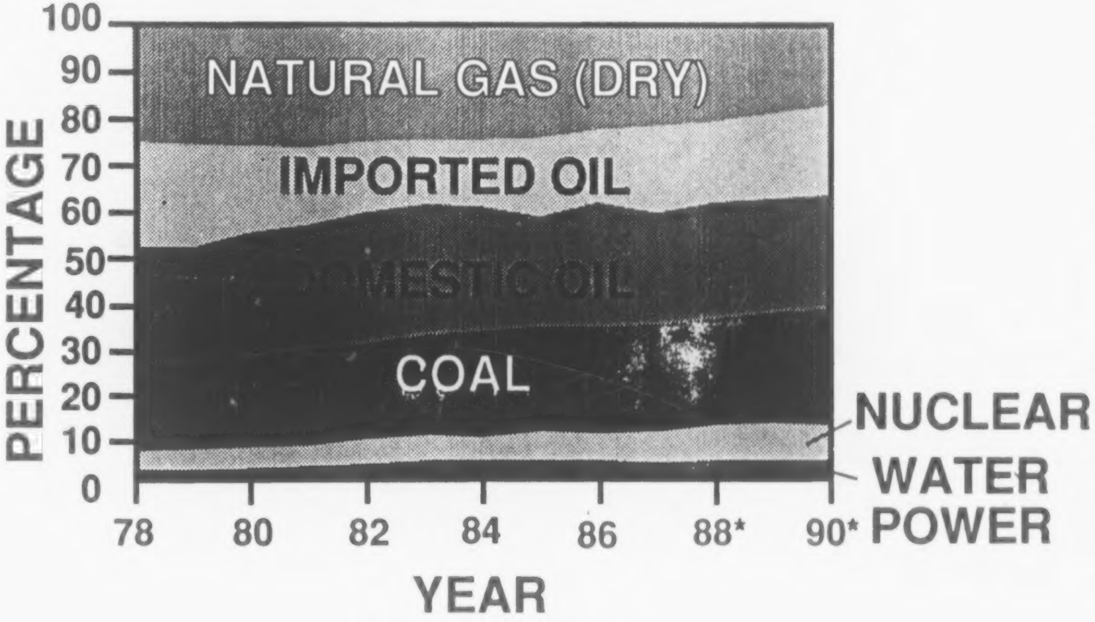
Over 90 percent of the Nation's domestically produced energy comes from oil, gas, coal, and uranium sources (see Figure G-15). Oil alone (currently 42% of which is imported and increasing) provides over 90% of the Nation's transportation energy needs. If domestic energy production is to increase or remain constant, it must do so in an increasingly environmentally conscious public arena and compete with less expensive foreign energy sources.

Detailed information identifying the types, quantities, and locations of acceptable energy resources is needed by policymakers in a variety of Federal agencies for management of Federal lands or in cooperation with the Department of Energy to formulate a National Energy Strategy. Much of this information is derived from ongoing energy research efforts at the USGS. The ESB program forms the core for much of the USGS's energy research. The program provides a framework of energy research information needed for the integration of commodity specific research and assessment activities in the oil and gas, coal, oil shale, and uranium/radon programs. This information is publicly accessible and is used by domestic energy suppliers, especially independents, to expedite exploration activities as well as energy and environmental researchers.

The 1988 National Research Council report of the Committee Advisory to the USGS concluded that an expanded ESB program "should become the core of the USGS energy research program," and they noted that it would be significantly enhanced if:

o Adequate steps were taken to obtain and maintain regional high-quality data bases, including shallow and deep reflection seismic data and cores and samples;

Figure G-15.-- **UNITED STATES ENERGY SOURCES**



* Projected Data, 1988 to 1990 (DOE/EIA)

- Existing data bases were updated and enhanced;
- Expanded efforts were undertaken to include crustal analysis, integrating these with the analysis of the evolution of sedimentary basins and their contained energy resource; and
- Cooperative efforts with States and universities were expanded.

The proposed $1,250,000 increase would allow the USGS to address these shortcomings and would provide independent, unbiased information on our domestic energy resource base required by DOE to meet their Presidential directive to develop a National Energy Strategy by providing the necessary funding to:

- Establish a National Energy Research Seismic Library;
- Acquire new data bases needed in new areas selected for investigation (e.g., Illinois Basin, Eastern Great Basin, and Paradox Basin);
- Upgrade and maintain existing data bases, particularly in oil and gas and coal commodities; and,
- Establish cooperative programs with States and universities and work more closely with other Federal agencies such as DOE in areas of mutual interest.

These upgrades would provide strong ties and cross-linkages between energy commodities and basin analysis that will be needed in order to identify viable domestic sources of oil and gas, coal, and uranium needed by the Nation.

Distribution of change by objective class:

The object class detail for the proposed $1,250,000 increase is as follows:

	Amount
Communications, Utilities, and Misc. Charges------------------------	$ 200,000
Printing and Reproduction-------------	50,000
Equipment----------------------------	500,000
Other Services------------------------	500,000
Total------------------------	$1,250,000

Coal Investigations

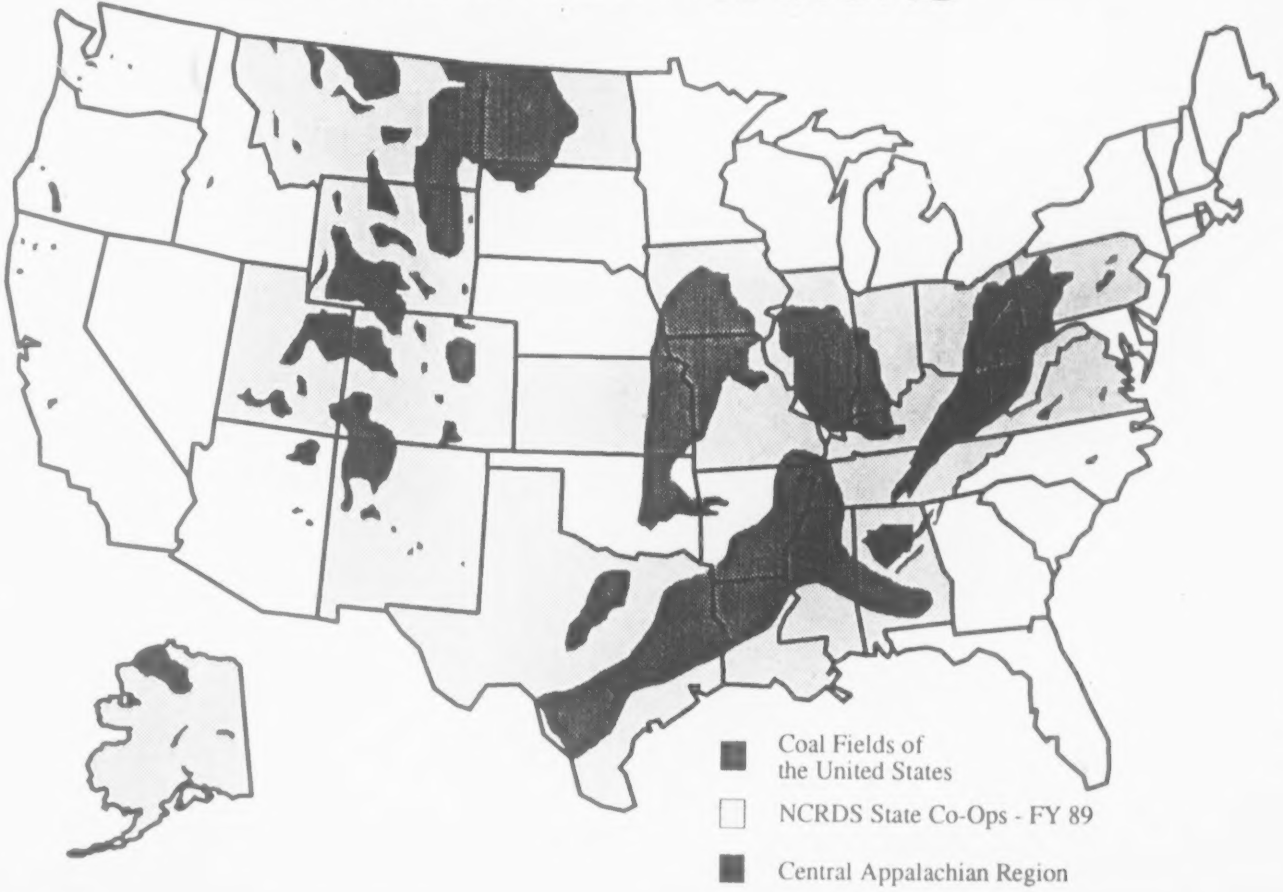
Objective: To conduct geological, geophysical, and geochemical investigations of domestic coal deposits (see Figure G-16) in order to produce reliable, credible, and scientifically based assessments of the quality, quantity, and availability for development of U.S. coal resources; to develop predictive models concerning the origin, distribution, and quality of coal; to develop and maintain a computerized National Coal Resources Data System for data storage which is also capable of producing reliable and timely coal resource, coal quality, and coal availability assessments; and to publish the results in a timely manner and in formats appropriate to end user needs.

Base Program: Coal Investigations research consists of two components: Coal Resource Investigations and the National Coal Resources Data System. A Federal coal investigations program is essential to ensure the existence of a publicly available, reliable, and comprehensive data base on which to base short and long term policy and management decisions concerning the Nation's endowment of coal resources. Such decisions concern energy mix, economic development, national defense, tradeoffs among competing energy resources, transportation needs, environmental issues, matters of regulatory reform, coal export issues, and Federal land policy. There is no other public source of comprehensive nationwide information on coal resources.

a. Coal Resource Investigations: This component consists of field and laboratory geologic, geophysical, and geochemical (quality) studies of coal deposits. The work is composed primarily of research to delineate and characterize potentially economic coal deposits in the United States, and the characterization of the use potential of specific coal deposits. The essence of the Coal Resources Investigations component, partly conducted in cooperation with State Geological Surveys, is the acquisition of fundamental geologic, geophysical, and geochemical data, both surface and subsurface, aimed at understanding the nature of coal deposits in the United States. These fundamental data are compiled into publicly available reports on coal habitat, quantity, quality, and availability for Federal, State, and private lands.

Coal quality studies are conducted to permit the extrapolation of point source data on coal quality throughout a coal basin, and to identify deposits of potential economic significance. These studies lead to a reliable assessment of a basin's coal resources and an understanding of how and where variations in coal quality may affect societal and environmental acceptability of coal exploitation. While there are extensive known coal deposits throughout the United States, new data on coal quality, in combination with information on the location, thickness, overburden, interburden, structural attitudes, and accessibility are critical to determining the overall economic potential of the deposits. Coal quality factors such as heating value, moisture and ash content, and sulfur and trace element content are fundamental to determining coal quality related resource characterizations. Determinations of sulfur content in coal deposits nationwide are particularly important to acid rain and acid mine drainage concerns. Other qualities of coal determine whether or not a particular coal deposit is suitable for such potential uses as direct burning, gasification, removal of contaminants through cleaning procedures, and coal bed methane production. Knowledge of these factors aid the Nation in increasing

FIGURE G-16.-- COAL INVESTIGATIONS


Coal Fields of the United States
NCRDS State Co-Ops - FY 89
Central Appalachian Region

coal use in an environmentally acceptable manner, including the development of state of the art extraction and purification technologies and solving acid rain and acid mine drainage problems. Coal quality data contribute to coal cleaning, combustion, and synfuel technology development, environmental impact studies, and regulatory policy planning.

FY 1990 and FY 1991 plans are to continue studies on correlating coal beds and synthesizing the coal geology of the Appalachian and Powder River basins; the belt of Cretaceous coal deposits in the Western United States and Alaska; studying the chemical components in coal that cause acid deposition and boiler breakdown; focusing on the origin and distribution of sulfur in coal; compiling a range of coal quality and quantity maps for important resource areas; and continuing the development of methods to predict the location, size, and quality of coal deposits from limited data, including expansion of coal deposit analog studies based on modern peat deposits.

b. National Coal Resources Data System (NCRDS): NCRDS is a coal data base and a sophisticated data management system developed to facilitate coal related policy analysis and decision making at all levels of Government and the private sector.

NCRDS has an important function in the area of coal quality as well as in its coal resources function. Coal quality data are entered into NCRDS for: 1) nationwide distribution; 2) geostatistical analysis of coal quality research results; 3) assessment of blocks of coal having specific coal quality attributes; and 4) preparing integrated visual displays of coal quality, coal resource, and coal accessibility related data. NCRDS is designed to generate assessments of coal quantity and quality by region, State, county, or smaller subdivision as required. Of the major coal bearing States, 22 are updating their coal resource assessments in cooperation with NCRDS.

NCRDS incorporates aggregated geologic and coal quality data obtained from mines, drill holes, oil and gas wells, and outcrops, including measurements such as coal bed overburden and interburden thicknesses, moisture, sulfur, ash, and trace element content, and heating value. The data file can be used to produce computer drawn resource maps of various types, including coal quality maps and coal availability maps. These maps are used for: 1) national energy policy planning; 2) State and Federal responsibilities for mining development and regulations under the Surface Mining and Reclamation Act; 3) development of coal extraction technology and regional development models by industry and government entities, such as the Bureau of Mines; and 4) lease evaluation by government agencies such as the Bureau of Land Management, including multiple land use planning, as well as quantitative resource assessments.

NCRDS and its Geographic Information System (GIS) capability are also used to produce coal availability maps which provide a measure of the coal actually available for development as opposed to in-place resources. Coal availability studies were conducted in FY 1989 in three 7.5 minute quadrangles in the Central Appalachian low sulfur coal-bearing region (1 each in Kentucky, West Virginia, and Virginia). This effort involved considerations of adverse geologic factors, cultural, political, and environmental concerns, and engineering technology problems that limit access to the total resource. The GIS format permits rapid changes to be made to assessments if conditions that restrict coal availability change.

Entry of data into NCRDS is being accomplished through cost-sharing cooperative agreements with 22 State Geological Surveys. The amount of overall funding for State contracts will be continued at about the FY 1990 level in FY 1991.

In FY 1990 and 1991, plans are to continue to improve the ability of NCRDS to assimilate and manipulate data on coal resources, quality, and availability in order to more cost effectively conduct assessment calculations and to answer questions from other Federal agencies, States, and the public in a more timely manner; to carry out three coal availability studies in the Central Appalachian region in FY 1990 until a representative number, approximately 20 studies for the region, have been completed; to continue to make NCRDS more accessible to State cooperators and project scientists for their day to day research by developing access through a personal computer; and to continue to update estimates of the Nation's coal resources.

Recent accomplishments include:

- Completion of nine coal availability studies in the Central Appalachian Region in cooperation with the State Geological Surveys of Kentucky, Virginia, and West Virginia. Using the data and GIS capabilities of NCRDS, the results of the studies show that of the total in place coal resources in nine 7.5 minute quadrangles the amount available for mining was only about 56 percent as a result of land use or other restrictive factors. Of the available coal, only about 40 percent can be classed as low sulfur, or "compliance," coal. These results provide evidence that there may be much less coal actually available for development in the U.S. than previously believed.

- Continued support of 22 States preparing statewide or county coal resource reports; upgrading database management software to handle the increasing volume of data; installation of companion GIS software to improve map compilation and data integration; and continued efforts to make NCRDS data and programs available through personal computers or work stations and thus reach a broader range of users in a more economical manner.

- Development of a geologic understanding of the southern part of the Western Interior coal basins (see Figure G-16) that can be used to interpret the depositional environments of low sulfur as well as other kinds of coal deposits. These data can be used to develop models to explore for similar coal deposits in similar basins elsewhere.

- Continuation of the work of two consortia of State, industrial, academic, and Federal institutions to jointly study problems of resources, development potential and impacts, and utilization of the lignites, one in the Gulf Coast region of Texas, Louisiana, Mississippi, and Alabama and the other in the Fort Union region of Montana, North Dakota, and South Dakota.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate
Topical coal investigations	18	18	17	17
NCRDS State Coops	22	22	22	22
NCRDS data points entered	15,000	15,000	15,000	15,000
Coal Availability Studies	3	3	3	1

Decrease for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	7,437	6,381	-1,056
FTE	109	109	--

The decrease reflects a reduction in the number of coal availability studies. Acquisition and analysis of data for updated assessments of the Nation's coal resources will be curtailed.

Distribution of change by object class:

The object class detail for the proposed $1,056,000 decrease is as follows:

	Amount
Travel and Transportation	$ 88,000
Other Services	590,000
Supplies and Materials	68,000
Equipment	310,000
Total	$1,056,000

Oil and Gas Investigations

Objectives: The Oil and Gas Investigations program is primarily responsible for conducting topical and regional geological, geochemical, and geophysical research concerned with the origin, migration, accumulation, distribution, and efficient recovery of oil and gas. The data and knowledge acquired through this research provide the basis for assessments of the oil and gas resources of both public and private lands in the United States. The results of research conducted under the Oil and Gas Investigations Program also provide useful scientific insights for major oil companies and serve as a research base for independent oil companies, which drill most of the wildcat exploration wells in the United States but which do not have any research capability of their own.

Base Program: The Oil and Gas Investigations program comprises several components, which cooperate to conduct research into the origin, habitat, and distribution of petroleum and to assess the resources of oil and gas remaining to be discovered in the United States. The principal parts of the Oil and Gas Investigations program are (1) the Organic Geochemistry component, (2) the Reservoir Characterization component, (3) the Geophysical Investigations component, (4) the Alaskan Petroleum Geology component, and (5) the Resource Assessment component.

The Organic Geochemistry component of the Oil and Gas Investigations program investigates the origin and thermal evolution of organic carbon-rich petroleum source rocks in petroliferous sedimentary basins. These studies provide basic information concerning the generative capacity of potential source beds and the origin of petroleum. Geochemical investigations of oils, gases, and source beds provide a means of identifying and classifying hydrocarbons with respect to their sites and modes of origin and the volumes of oil and gas originally yielded by source rocks. Studies of thermal maturation, hydrocarbon-bearing fluid inclusions, and hydrologic settings of petroleum determine the sites of origin and migration pathways for oil and gas and provide the means for predicting their distribution in potentially productive basins.

The Reservoir Characterization component of the Oil and Gas Investigations program comprises sedimentologic, mineralogic, geochemical, and petrologic studies of conventional and unconventional, low permeability reservoir rocks, which are the ultimate site of petroleum accumulation. These studies define the geometry, distribution, porosity, permeability, and chemical sensitivity of hydrocarbon reservoirs and thus provide the basis for evaluating reservoir quality on a national, regional, or site specific basis. Current emphasis of the Reservoir Characterization component is the evaluation of factors controlling oil and gas recoverability factors in reservoirs of the United States.

The Geophysical Investigations component conducts computer based modeling, processing, and interpretation of geophysical (mainly seismic) data. The activities of the geophysical investigations component provide the structural framework of tectonically complex regions of the Earth's crust and yield direct information about the structural and sedimentary style of petroliferous basins. These studies provide a means of evaluating subtle and otherwise hidden sites of petroleum entrapment.

The Alaskan Petroleum Geology component is concerned with investigations of hydrocarbon resources in frontier provinces of Alaska, especially those of the North Slope, the Interior basins, and the distribution of shallow gas hydrate accumulations in northern Alaska. Ongoing studies are developing the basic petroleum geology for interpreting the distribution and abundance of oil and gas in northern and east-central Alaska with particular emphasis on the Kandik basin/Yukon flats area.

The Resource Assessment component of the Oil and Gas Investigations program uses the findings of each of the other components as well as expertise from other programs such as the Evolution of Sedimentary Basins and the Geothermal Investigations programs and data from other agencies and States. Knowledge of petroleum geology acquired from these studies is used by program researchers conducting assessments as the scientific basis for periodic independent government evaluation of the distribution, abundance, and recoverability of oil and gas resources in the United States.

In FY 1990 and FY 1991, research will concentrate on:

- Assessment of oil and gas resources on Federal lands.
- Petroleum geology of the Santa Maria Basin and other California margin basins.
- Geology and petroleum resource evaluation of the eastern Basin and Range province.
- Evaluation of unconventional reservoirs including tight gas resources (jointly funded by DOE), natural gas in deep sedimentary basins (jointly funded by the Gas Research Institute), coal bed methanes, and gas hydrates in FY 1990.
- Petroleum resource potential of selected areas in Alaska to better resolve uncertainties in resource estimates.
- Reservoir characterization studies to evaluate oil and gas recoverability.
- Continued topical research in organic geochemistry, seismic geophysics, and sedimentology.
- Resource assessment methodology to continually improve ongoing assessments.
- Initial work for the next national oil and gas assessment.

Recent accomplishments include:

- Completed initial assessment of undiscovered oil and gas on Federal lands.
- Published the new assessment of conventional oil and gas resources.
- Established a new project to assess unconventional resources of oil and gas.
- Initiated studies of petroleum potential in the eastern Basin and Range.
- Completed initial studies of gas resource potential at depths in excess of 15,000 feet.
- Completed initial field work to evaluate petroleum potential of the Kandik Basin and Yukon Flats, Alaska.
- Completed initial testing of application of ground based radar for development of reservoir quality models.
- Developed organic geochemical data base for use in resource studies.
- Developed and published predictive methods for evaluating hazards associated with terrestrial gas hydrates.

- Continued work on coal beds as gas sources and coal beds as reservoir rocks.

- Developed methods for predicting reservoir porosity and sediment-compaction basin subsidence based on time-temperature exposure.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate
National assessment	1	0	0	0
Onshore oil and gas assessment	1	2	2	2
Hydrocarbon potential studies	10	9	9	8
Topical research	16	16	16	16
Petroleum migration, generation, and entrapment studies	2	2	2	0
Subtle oil and gas traps studies	3	3	3	0

Decrease for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	5,707	4,905	-802
FTE	95	95	--

This decrease reflects the suspension of five research projects that were designed to address the areas of petroleum generation, migration, and entrapment and to define and understand subtle oil and gas traps. This decrease also reflects one less hydrocarbon potential study used for assessments of the Nation's petroleum resources.

Distribution of change by object class:

The object class detail for the proposed $802,000 decrease is as follows:

	Amount
Travel and Transportation of Persons- - - -	$ 70,000
Transportation of Things- - - - - - - - - -	40,000
Communications, Utilities, & Misc. Charges-	50,000
Printing and Reproduction - - - - - - - - -	25,000
Other Services- - - - - - - - - - - - - - -	400,000
Supplies and Materials- - - - - - - - - - -	67,000
Equipment - - - - - - - - - - - - - - - - -	150,000
Total - - - - - - - - - - - - - - -	$802,000

Oil Shale Investigations

Objectives: To determine the geologic habitat, quantity, and quality of domestic oil shale deposits and associated mineral resources for the purpose of developing these resources with sound mineral conservation practices and with minimum impact on the environment; to prepare a computerized database of oil shale resources for regional and national resource assessments; and to preserve selected oil shale cores and samples for present and future research.

Base Program: Research conducted under the Oil Shale Investigations program is focused primarily on the Green River oil shale deposits in Colorado, Utah, and Wyoming because: (1) they contain an enormous potential resource (1.2 trillion barrels of oil equivalent); (2) these deposits are largely on federal lands; and (3) these deposits are the most likely to be developed first. The USGS provides State and Federal planners with assessments of the quality and quantity of the Nation's oil shale resources.

The Oil Shale program supports the interests of numerous Federal, State, and county agencies, industry, and academia. In addition to published reports and maps completed under the program, much data, drill cores, samples, and technical expertise is made available to members of industry and many governmental agencies. Because the Green River oil shale deposits occur largely on federal lands, testimony and information is often furnished to the BLM as well as to State agencies, private companies, and consultants. Cooperative work on foreign oil shale has been done in Thailand, Sweden, Jordan, and Italy which has been valuable in making comparisons of these foreign deposits with those in the U.S., particularly with regard to the development of mining and retorting technologies. For the past several years, a USGS scientist and Hycrude Corporation, a subsidiary of the Gas Research Institute, Chicago, Illinois, have conducted an informal study of testing a new process of retorting oil shales of different origins and ages. This process was developed in the laboratories of the Institute of Gas Technology in cooperation with Phillips Oil Company as a method of improving gas recovery from black shales. However, it was found that the process substantially increased the production of shale oil when compared with conventional methods of retorting as measured by Fischer assay.

USGS researchers collected and analyzed samples from 31 deposits of oil shale from around the world in order to investigate how different types of oil shale respond to hydroretorting. The results showed that some oil shales of marine origin, such as the oil shales of the eastern United States and shales from Sweden can yield by hydroretorting as much as 200 to 400 percent of Fischer assay yields. Although the hydroretorting technology may not be economic today, the research to date does reveal that the potential resources of oil shale in the eastern U.S. deposits may be more than doubled. Hydroretorting technology may be attractive to countries that have oil shale deposits but lack oil and gas resources, such as Sweden, Jordan, Morocco, and others. A report on the results of the cooperative study is in preparation and a paper was presented at the 1989 Eastern Oil Shale Symposium, Lexington, Kentucky, in November, 1989.

In FY 1990, oil shale research includes:

- Completing geologic maps of several quadrangles in the Piceance Creek Basin, Colorado

- Studying the chemical and mineralogical variations that may affect the processing of oil shale into synthetic fuels and other valuable byproducts and the potential for release of environmentally sensitive elements in to air, water, and soils during processing and by leaching of mine tailings
- Examination of water-conducting fracture systems in the Piceance Creek Basin in Colorado.

Some benefits of this research include:

- Determining the detailed physical stratigraphy of oil shale deposits in Colorado and eastern Utah. This work is now the standard used by industry
- Unraveling the intricate intertonguing relationships between the Uinta and Green River Formations
- Discovery of important potential resources of sodium minerals commingled with some of the richest oil shale in the Piceance Creek Basin
- Determination of the mineral residence of selected trace elements in oil shale that are of environmental concern
- Modeling the depositional environment of sodium minerals and oil shale in the Piceance Creek Basin
- Discovery that marine (ancient ocean floor) oil shales can yield substantially more oil than lacustrine (ancient lake beds) oil shales using hydroretorting techniques
- Detailed analysis of fracture systems in Green River oil shale and older rocks in the Piceance Creek Basin that are important to oil shale mining and to understanding ground-water movement.

Research priorities for FY 1991 include:

- Compilation of basinwide geologic maps and stratigraphic studies of the Green River oil shale deposits
- Studies of organic petrography and thermal maturity of the Green River deposits
- Development of an expanded oil shale database that would include geologic, geochemical, mineralogical, and resource data for drill cores and oil shale samples in the USGS's Core Research Center on the Denver Federal Center
- Continuation of cooperative studies with academia, industry, and other federal agencies on basic research in oil shale and in support of the development of new oil shale technologies

Recent accomplishments include:

- A series of resource maps of selected economic units of Colorado oil shale continue to be published. This series of maps shows in detail the resources of the oil shale units in the Piceance Creek Basin, as well as detailed stratigraphy with a summary of the total resources in the basin. These maps are the first complete analysis of the Colorado oil shale resources.

- An additional 70,000 linear feet of oil shale drill cores from 320 wells have been transferred to the USGS from the former U.S. Bureau of Mines laboratories in Laramie, Wyoming, to further expand the USGS oil shale data base. Well data includes western deposits, the Devonian shales of the eastern U.S., and several foreign deposits. A preliminary computer inventory of all of the core hole information for Colorado has been completed.

- A comprehensive database and computer programs designed to operate on a personal computer have been developed. The database includes more than 250,000 shale oil analyses (Fischer assays) for about 1,300 core holes. A large collection of geologic data, including geophysical and lithologic logs, geochemical and mineralogical data, and X-ray diffraction analyses is on file and will be added to the computer database.

Uranium and Radon Investigations

Objectives: To conduct research to improve the understanding of the geologic setting and distribution of domestic uranium and radon gas (and associated materials) at regional and national scales; to develop techniques for increasing the discovery rate and exploitation of low cost, world competitive nuclear raw materials; to develop the regional geologic guides for the assessment of undiscovered uranium resources; to administer the National Uranium Resource Evaluation (NURE) data base transferred from the Department of Energy (DOE); and to develop geologic models for hazard assessments of uranium and radon in soils and waters and mitigation efforts by other Federal, State and local agencies, and the private sector.

Base Program: The base program consists of two major elements: 1) basic research on earth processes that form and the geologic framework that controls the distribution of uranium, radon gas, and associated base metals, precious metals, and rare-earth minerals; and 2) providing required geologically based estimates of the Nation's uranium endowment to the technical public and Federal agencies. Both elements have direct and important application to the assessment of and exploration for other strategic minerals for which there are no comparable industry or government systematic data.

In relation to the latter, the program is responsible for administering the former Department of Energy NURE program. Under the terms of a Memorandum of Understanding with the DOE, the Geological Survey is required to conduct, on behalf of the Energy Information Administration (EIA), uranium resource assessment work that meets the objectives of the industry viability study, i.e., provide conditional uranium endowment estimations, based on a mutual selection of prospective resource areas and classifications according to DOE standards. The USGS and EIA share the responsibility for the preparation and publication of the congressionally mandated biannual uranium report pertinent to international activities. With these transferred responsibilities, the Survey assumed operation of the NURE program including all nonproprietary geoscience data, which the Survey is required to maintain for public access and distribution.

The research program focuses its efforts on topics or geographic areas where results of investigations can be expected to affect estimates of undiscovered uranium and to identify and characterize environmental hazards caused by naturally occurring uranium, especially radon. The program is also responsible for the development of ore genesis models in order to improve techniques for the discovery of new deposits, make more accurate assessments of uranium resources in explored districts, and perform such assessments in insufficiently explored terranes. Most of the research is based on data generated by mine and district studies undertaken by industry, the Geological Survey, and the Department of Energy and its contractors. Six major topical research categories are pursued: 1) uranium framework geology (stratigraphy and geochronology) investigations of ore forming processes, geochemical controls, source rock, mineralogy and chemistry, and geochemical exploration techniques leading to estimations of potential uranium endowment; 2) uranium in igneous and metamorphic and veined rocks (development of models describing unusually rich deposits found at geologic unconformities and other "world class" deposits such as uranium/molybdenum and uranium/gold deposits in volcanic centers, which are expected to dominate the world uranium market for at least the next decade); 3) uranium and associated metals in sedimentary environments (studies designed to understand the geologic characteristics and controls on ore deposition); 4) developing geophysical, biogeochemical, and mathematical means to detect characteristics or patterns leading to uranium deposits; 5) resource assessment studies and improvements in evaluation methods; and 6) investigations to identify and model very young surficial uranium accumulations that represent both potentially economically mineable ore deposits and sources of potentially hazardous, toxic uranium metal. As part of topical research category (6) above, the USGS, in cooperation with concerned Federal, State, and local agencies, is investigating the sources and geological conditions of hazardous radon gas. Investigations are conducted to identify the causes and origin of radon accumulations in populated areas. This research is based in part on data gathered under the aegis of the NURE program, such as aeroradiometric data, to locate potentially high radon gas emissive terrane. Radon, a radiogenic decay product of naturally decaying uranium, has been found at potentially dangerous levels in dwellings in the Reading Prong (Pennsylvania, New Jersey, New York) area and in the States of Virginia, Maryland, Idaho, Colorado, Ohio, Wyoming, North Dakota, Minnesota, and Washington. High levels in water supplies also occur in many of these States.

Topical subjects and geographic areas that continue to be investigated in FY 1990 and FY 1991 are: 1) relatively recent surficial sedimentary uranium deposits throughout the United States, including the potential presence of radon in soils and uranium in waters located within marshy wetlands areas; 2) uranium in mineralized zones of the Colorado Plateau; 3) uranium in metamorphic rocks in the Piedmont Province of the Eastern U.S.; 4) uranium in older sedimentary rocks of the Great Plains; 5) uranium decomposition and the distribution of radon gas in mineral deposits such as the Reading Prong area of the Eastern United States and other locations; 6) old and new uranium resource production and occurrence data is being computerized and will be used in preparation of maps that show the distribution of uranium deposits, by size; and (7) uranium investigations in four 1:250,000 scale quadrangles in the tristate areas of Wyoming, South Dakota, and Nebraska.

Recent accomplishments include:

- Field investigations of the geology, geochemistry, and microbiology of a uraniferous wetlands in the upper Laramie River area of the north-central Colorado Rockies were completed. Data are being prepared for a series of publications. These studies were conducted in collaboration with studies of the modern ecology by wetlands scientists from the Colorado State University.
- Completed a USGS Bulletin on the distribution of uranium in wetlands along stream and river valleys and adjacent to lakes in the Colorado Rocky Mountains.
- Stratigraphic studies of uranium deposit host rocks in northwestern Nebraska continued.
- Began studies of source rocks for uranium deposits in wetlands in northeastern Washington State.
- Field work in uranium and radon-rich shear zones in the eastern U.S. was extended to the Brevard Zone near Atlanta, Georgia. Previous studies in other shear zones in the east have been described in an extensive series of oral presentations and publications.
- Completed work on multiauthored USGS Bulletin on radon in rocks, soils, and water, containing approximately 25 papers, and submitted the report for review and subsequent publication.
- In collaboration with State and county agencies, field studies of radon in soil gas in Price Georges County, Maryland were completed. These data will form the basis for a map showing radon potential of rocks and soils in the county.
- Completed monitoring of radon in soil gas at a field site on the Denver Federal Center in Colorado. Results of this study have been reported in several meetings and publications. Continued monitoring radon in soil gas at the USGS facility in Reston, Virginia, to document seasonal variations.
- Completed a USGS general interest publication and a chapter on the geology of radon for an American Society of Testing and Materials book on radon.
- Completed modelling studies of the transmission to and adsorption of radon by passive detectors (charcoal canister and alpha track devices) in the ground.

Results of geologic investigations in uranium and radon have been widely disseminated in formal talks at scientific meetings and in the geologic literature. Program personnel have had several contacts from individuals regarding the National Uranium Resource data base for aeroradiometric, stream sediment, and water geochemical data that can be used in radon investigations, in mineral exploration, and in environmental and water quality studies. Because of the intense interest in the geology of radon, program personnel have responded to hundreds of requests for information, briefings, and informal talks on radon geology from private parties, consultants, classroom teachers and earth science teachers groups, geotechnical engineering firms, Federal, State, and local agency officials, homeowners groups, radon industry associations, radio, television, and newspaper reporters, members of Congress, and Congressional committees. The USGS has prepared a radon general interest publication, designed for the layperson, that will describe the basics of the geology of radon. Radon has been an important part of several public displays of ongoing USGS activities at Open Houses and scientific meetings. The radon group has established an electronic bulletin board in Denver for interested parties.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate
Studies of the origin and distribution of uranium deposits	4	4	4	4
Studies to assess the uranium resources of the U.S.	1	1	1	1
Studies to determine the origin, distribution, and resource potential of surficial uranium deposits	3	3	3	3
Studies on the geologic factors controlling the concentration of radon	4	4	4	0

Decrease for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	2,146	1,872	-274
FTE	43	43	--

Currently ongoing USGS topical radon research studies of the geologic factors controlling the concentration and accumulation of radon gas in public and private facilities will be discontinued.

Distribution of change by object class:

The object class detail for the proposed $274,000 decrease is as follows:

	Amount
Travel and Transportation of Persons - - -	$ 55,000
Communications, Utilities, and Misc. Charges - - - - - - - - - - - - - -	32,000
Printing and Reproduction- - - - - - - - -	50,000
Other Services - - - - - - - - - - - - - -	92,000
Supplies and Materials - - - - - - - - - -	25,000
Equipment- - - - - - - - - - - - - - - - -	20,000
Total- - - - - - - - - - - - - - -	$274,000

Geothermal Investigations

Objectives: The goal of this program is to understand the nature, distribution, and magnitude of geothermal resources in volcanic and other areas of the United States in support of the evaluation and development of geothermal energy as an alternative energy source. This goal is being achieved through a program of activities and projects to:

- Study the distribution of heat in the continental crust.
- Determine the physical processes that produce exploitable geothermal resources.
- Characterize the geologic and hydrologic parameters of geothermal resources for energy assessments.
- Evaluate selected geoenvironmental concerns related to geothermal development.

These studies are coordinated with the geothermal energy development programs of the Department of Energy and are an important source of information for the land and resource management programs of the Bureau of Land Management, the National Park Service, and the Forest Service. Geothermal research studies are also coordinated with and supplemented by data from deep drilling projects of the Federal Continental Scientific Drilling Program of the National Science Foundation, the Department of Energy, and the USGS.

Base program: Geothermal energy sources occur in zones of hydrothermal convection (hot circulating water), in magma, and in hot dry rock. In geologic settings of recent volcanism or active crustal deformation, these three types of geothermal energy may occur individually or together. Geothermal resources are candidates for commercial production of electrical power if the temperature is sufficiently high, the resource is of adequate size, there is sufficient permeability for adequate fluid flow, and the deposit is within reach of commercial drilling. Geothermal resources containing insufficient thermal energy for electrical power production can be used for direct heat purposes, e.g., space heating, food drying, aquaculture, spas, etc.

At the present time, technological limitations and economic considerations permit the use of only high temperature hydrothermal convection resources for electrical power production. However, the Department of Energy and the geothermal industry are developing technology for electrical power production from lower temperature fluids as well. During the past several years, industrial activity has expanded beyond The Geysers geothermal field in northern California into central and southern California, Nevada, Utah, Oregon, and Hawaii.

The main components of the Geothermal Investigations program are Geothermal Processes, Geothermal Resource Characterization, and Geoenvironmental Effects.

The Geothermal Processes component consists of fundamental research to understand physical and chemical processes during the formation of geothermal resources and the interaction of magmatic and hydrothermal phenomena. These studies are directly related to and complement studies of volcanic processes conducted under the Volcano Hazards program in the Geologic Hazards Surveys subactivity.

These investigations help to identify the various types of geothermal systems and their resources, to describe the flow of heat within geothermal areas, and to understand the recharge of hydrothermal systems with cooler fluids from surrounding areas. This research leads to techniques for the estimation of the amount of thermal energy in individual geothermal deposits, and, within broader geothermal regions, the distribution of this energy in molten rock, in hot dry rock, and in zones of hot circulating water. In addition, these investigations provide a clearer understanding of the origin of ore deposits resulting from the solution of chemical elements in hot, circulating waters and the subsequent precipitation of these elements in mineral concentrations.

The Geothermal Resource Characterization component comprises multidisciplinary projects to define the characteristic geological, geochemical, geophysical, and hydrological parameters of all types of geothermal energy sources associated with volcanic areas and other thermal regions. These investigations consist of site specific studies of individual geothermal deposits, as well as regional geological and geophysical studies, to establish a framework for determining where geothermal deposits are likely to occur. The goal of these investigations is to develop specific and regional models of geothermal resources. Results of these studies lead to estimates of the nature, location, and energy content of the geothermal resources of the United States and an evaluation of the recoverability of the thermal energy from these resources. In its 1978 national geothermal resource assessment, the Geological Survey estimated that the amount of igneous related thermal energy stored in magma, hot dry rock, and hydrothermal convection zones to a depth of 6 miles might be as much as 100 times the energy stored in shallower (less than 2 miles) hydrothermal convection zones alone. Although the technology for extracting some of this deep geothermal energy is not yet economically competitive with other energy sources, the potential impact of such a large amount of energy is immense.

The Geoenvironmental Effects component consists of geologic, geochemical, geophysical, and hydrologic studies that address two objectives. The first is to determine the possible changes in seismicity, ground level, nearby ground and surface water, and the atmosphere that may be induced by the withdrawal of fluids from, or injection of fluids into, a geothermal system, as during well flow tests, electrical power production, or direct heat use. This includes study of how much carbon dioxide and other potential greenhouse gases are released in various types of geothermal use, for comparison with greenhouse gas released from other sources of energy. Results of this study contribute to the U.S. Global Climate Program and its research on the greenhouse effect. The second is to evaluate the nature and extent of possible effects on thermal features in units of the National Park System from nearby geothermal development. A significant part of this program component involves the establishment of baseline values and continual or periodic measurements to detect and identify natural and induced changes.

Recent accomplishments of the Geothermal Investigations program include:

- Initiation of geologic, geophysical, and hydrological studies of the area between Mammoth Hot Springs of Yellowstone National Park and the Corwin Springs Known Geothermal Resource Area just north of the National Park, in order to determine whether proposed geothermal development in the Corwin Springs area could affect hydrothermal systems of the National Park.

- Publication of a new geologic map of the Long Valley/Mono Craters area, California, and preliminary compilation of a similar map for the entire Island of Hawaii. Such maps, representing tens of man years of work, are fundamental in defining the size, geometry, and likely state of magmatic heat sources and the potential for their interaction with ground water.

- New measurements of heat flow from steaming areas in the Lassen geothermal area in northern California to supplement baseline measurements against which the effects of any future geothermal development may be assessed.

- Determination of the ages of hot spring deposits in Long Valley, California, for comparison with new geophysical and geochemical data from drill holes. The comparison will be used to check an hypothesis that water is being heated in the west part of the caldera and flowing east, in contrast to a previous interpretation from helium isotope ratios that magma lies beneath the east part of the caldera.

- Seismic imaging that defined a large body of low velocity material beneath Medicine Lake Volcano, probably magma or partially molten rock.

- Technical assistance to several foreign countries (Mexico, Costa Rica, Honduras, Panama, Kenya, and the Azores) on studies of geothermal fields.

- An interdisciplinary workshop on the geologic, geophysical, and tectonic setting of the Cascade Range, building the scientific basis for a regional geothermal resource assessment of the Cascades.

Program activities during FY 1990 and plans for FY 1991 include:

- Computer modeling of flow in hot water carbon dioxide systems, so that geyser activity such as that at Yellowstone can yield information about the physical and chemical conditions in an underlying geothermal reservoir, and related problems such as self sealing of a reservoir and scaling in geothermal wells.

- Continued descriptive and interpretive studies of thermal features in national parks, especially Lassen Volcanic, Crater Lake, and Yellowstone National Parks, to judge the potential impact of geothermal drilling outside these parks.

  - At Lassen Peak, geologic mapping and continued monitoring of flow rate, temperature, chemical composition of springs, and heat from steam heated thermal areas, in the Lassen geothermal area.

  - At Crater Lake, carbon profiling and other chemical studies to determine the input of carbon dioxide and other "volcanic" species into the lake. Chemical and physical modeling addresses questions of convection within the lake. Also, further detailed geologic analysis of the Crater Lake area and limited participation in a submersible study of the floor of Crater Lake led by the National Park Service and Oregon State University.

  - At Yellowstone's Corwin Springs KGRA (known geothermal resource area), electrical geophysics studies for delineation of conductive fault zones, seismic reflection for determining depth to bedrock, geologic mapping, stream gauge monitoring of hydrothermal output, geochemical and isotopic analyses, and hydrologic modeling to infer subsurface flow paths of thermal water, and analysis of data from existing wells.

- Continued revision of a conceptual model of the Long Valley, California, geothermal system, incorporating data from new (and newly accessible) drillhole data and age dating of hot spring deposits.

- Hydrogeologic, magnetic, and geoelectrical studies on Kilauea Volcano, to judge the influence of continuing magma intrusion on the geothermal potential of the east rift zone of Kilauea and implications for the geothermal potential of Mauna Loa, Hualalai, and Mauna Kea volcanoes.

- Continued fundamental research on thermodynamic properties, microstructures, reaction kinetics, phase equilibria, and fluid inclusions of minerals for estimating the depth and temperature of geothermal resources.

- Continued improvement of geophysical methods for imaging geologic structures related to hydrothermal systems.

- Regional magnetic, gravity, and geoelectrical studies of the Cascades Range, and chemical studies of its thermal springs, to test the hypothesis that cold surface waters mask deep geothermal resources in the Pacific Northwest.

- Fundamental research on the physical properties of magma, needed to refine interpretations of seismic and other geophysical data and thus to better define the geometry of magma reservoirs, the source regions of geothermal heat.

- Field, experimental, and theoretical investigations of the thermal evolution of the Earth's continental crust and upper mantle and the past and present thermal state of the continental crust in various tectonic settings.

- Geologic mapping of older, solidified magma reservoirs that, through erosion, are now exposed at the surface in Colorado, Arizona, and elsewhere. Such mapping suggests details about modern systems that complements information obtained by drilling.

- Continuation of geophysical, geochemical, and geologic studies of the Katmai volcanic complex, Alaska, in support of the planned multiagency Katmai deep drilling project.

- Cooperation with the Department of Energy and the National Science Foundation in direct sampling of the deep parts of hydrothermal convection systems and magmatic systems by deep drilling. Scientific investigations are planned in DOE sponsored drillholes near Long Valley, California, and at Valles caldera, New Mexico.

- Continued compilation of a geologic map of the Cascades in California, Oregon, and Washington, together with potassium argon age determinations, to recognize and interpret regional changes in volcanism and their implications for geothermal systems. This map is being extended by Canadian colleagues to include the Cascades of British Columbia.

- Comparison of the amounts of carbon dioxide and other "greenhouse" gases released in geothermal energy use to amounts released by other sources of energy.

- Continued hydrologic and geochemical monitoring of thermal features at geothermal areas in Long Valley caldera, California, and Steamboat Springs, Nevada, to delineate impacts of existing and planned geothermal developments on these public and private lands.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate
Regional geothermal studies	2	2	2	1
Evaluation of geothermal targets	3	3	3	3
Hydrologic models of geothermal systems	1	1	1	1
Geoenvironmental studies	1	1	1	2
Research projects on geothermal processes	2	2	2	1

Decrease for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	5,983	4,939	-1,044
FTE	86	86	--

The decrease reflects a reduction in research activities in support of hydrologic modeling and assessment of geothermal systems of the Cascade Range. Studies of carbon dioxide and other greenhouse gases in geothermal systems would be postponed. Studies associated with research drilling by other agencies in Katmai National Park will be discontinued. Research underway to determine the cause of the reduced heat at The Geysers geothermal plant in California is being curtailed.

Distribution of change by object class:

The object class detail for the proposed $1,044,000 decrease is as follows:

	Amount
Travel and Transportation of Persons - -	$ 222,000
Transportation of Things - - - - - - - - -	100,000
Communications, Utilities, and Miscellaneous Changes - - - - - - - - -	422,000
Printing and Reproduction - - - - - - - -	10,000
Other Services - - - - - - - - - - - - - -	200,000
Supplies and Materials - - - - - - - - - -	20,000
Equipment - - - - - - - - - - - - - - - -	70,000
Total - - - - - - - - - - - - -	$1,044,000

World Energy Resource Assessment

Objectives: To provide geologic information and assessments on world energy resources (with a focus on oil and gas) supportive of national planning and policy decisions relative to energy use, availability, ownership, international trade, and foreign policy. A coordinating committee serves to effect some elements of the transfer of information among government agencies.

Base Program: The focus of the program is the development of petroleum assessments and production potential by basin, by country, and by geographic regions. At the specific request of other government agencies (e.g., Department of Energy, Department of State, Agency for International Development, Congressional Research Service), priorities for particular geographic areas and subject matters are selected for study. The supporting geologic research complements the domestic research program and vice versa.

To date, the program has completed two successive assessments, at 4-year intervals, of world crude oil distribution, quantity, and quality which were reported to and published by the World Petroleum Congress (WPC) in 1983 and 1987 and has been invited to submit similar but significantly expanded world petroleum analyses to the 1991 WPC; separate reports on many individual areas also have been published. The analysis of world natural gas was completed in FY 1986 and included in the second report to WPC in 1987. Significant conclusions of the work are that no new sites of potential undiscovered resources appear to have a dimension in excess of 20 billion barrels of oil (BBO). This means that discoveries of the 1970's in the North Sea and in Mexico (new provinces) are not likely to happen again. The report further states that although the Middle East controls a high percentage of reserves, the distribution of production capability could preclude Middle East production dominance and hence preclude a monopoly until possibly the year 2010. Even then, counterbalancing production of tar sands (from Canada), extra heavy oils (from Venezuela), and natural gas in the form of natural gas liquids (NGL) could limit the monopoly power if, in fact, consumer societies can see to their development in a timely manner.

FY 1990 and FY 1991 plans are to continue to develop petroleum resource summaries with a focus on Latin America but including also Australia, Southern Europe, and the Mediterranean area. In addition, a major world petroleum analysis will be prepared for the 15th Anniversary Volume of the Annual Review of Energy published by Annual Reviews Inc., Palo Alto, California.

Program efforts to standardize and systematize maps displaying petroleum data, and to develop finding rate analyses leading to production projections will continue. This latter activity is critical to evaluating production potential in non-Opec countries which are critical to our energy security.

Recent accomplishments include:

- o A USGS bulletin on major source rocks distribution and their relation to discovered occurrences and polar plate positions was published. This study accounts for source rock occurrence responsible for 95% of world oil and gas.
- o A report on the petroleum geology and resource assessment of Antarctica was completed and submitted for review.
- o A new revised geologic report on the petroleum resources of West Siberia was published.
- o A 1:5,000,000 scale map of China showing petroleum basins, discovered oil and gas fields, and evaluating areas of exploration interest with accompanying cross sections of tabular and textual data was published.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate
Petroleum summaries by individual areas	4	4	4	4

U.S. GEOLOGICAL SURVEY
Analysis by Subactivity

Activity: Water Resources Investigations

(Dollars amounts in thousands)

Subactivity	1989 Actual	1990 Approp. Enacted	1990 Adjusted Approp.	1991 Base	1991 Estimate	Inc. (+) Dec. (-) from Base
National Water Resources Res.& Info. System - Federal Prog.	75600	81320	80221	82044	94340	12296
National Water Resources Res.& Info. System - Federal/State Coop Program	58900	59783	58974	60416	56147	-4269
National Water Resources Res.& Info. System - State Research Institutes & Research Grants Program	10821	10826	10680	10782	5229	-5553
TOTAL	145321	151929	149875	153242	155716	2474

Water Resources Investigations
Subactivity/Element Change Crosswalk - FY 1990 Estimate
(Dollars in thousands)

Format of FY 1990 Congressional Budget	Amount 1990 Adj. Approp.	Format of FY 1991 Congressional Budget	Amount 1990 Adj. Approp.
Nat'l Water Resources Res. & Info. System-Federal Program	80221	Nat'l Water Resources Res. & Info. System-Federal Program-No Change	80221
Data Collection & Analysis	21169	Data Collection & Analysis	21169
Natl Water Data & Info. Access Program	3398 a/	Natl Water Information Clearinghouse	3398 a/
Coordination of Natl Water Data Act.	976	Coordination of Natl Water Data Act.	976
Regional Aquifer System Analysis	10982	Regional Aquifer System Analysis	10982
Core Program Hydrologic Research	8565	Core Program Hydrologic Research	8565
Improved Instrumentation	1656	Improved Instrumentation	1656
Water Resources Assessment	1352	Water Resources Assessment	1352
Toxic Substances Hydrology	14174	Toxic Substances Hydrology	14174
Nuclear Waste Hydrology	3814	Nuclear Waste Hydrology	3814
Acid Rain	2895	Acid Rain	2895
Scientific & Technical Publications	2228	Scientific & Technical Publications	2228
Natl Water Quality Assess. Program	7039	Natl Water Quality Assess. Program	7039
Climate Change Hydrology	1973 b/	Global Change Hydrology	1973 b/
Nat'l Water Resources Research & Info. System-Fed/State Coop Program	58974	Nat'l Water Resources Research & Info. System-Fed/State Coop Program	58974
Data Collection & Analysis	50505 c/	Data Collection & Analysis	55070 c/
Water Use	3904	Water Use	3904
Coal Hydrology	4565 c/		
Nat'l Water Resources Research & Info. System-State Res. Instit. & Research Grants Program-No Change	10680	Nat'l Water Resources Research & Info. System-State Res. Instit. & Research Grants Program-No Change	10680
TOTAL	149875	TOTAL	149875

a/The National Water Data & Information Access Program was renamed the National Water Information Clearinghouse.

b/The Climate Change Hydrology program has been renamed Global Change Hydrology.

c/The Coal Hydrology program was combined with the Federal/State Coop Data Collection & Analysis program.

Water Resources Investigations
Subactivity/Element Change Crosswalk - FY 1991 Estimate
(Dollars in thousands)

Format of FY 1990 Congressional Budget	Amount 1991 Estimate	Format of FY 1991 Congressional Budget	Amount 1991 Estimate
Nat'l Water Resources Res. & Info. System-Federal Program.................	94340	Nat'l Water Resources Res. & Info. System-Federal Program.................	94340
Data Collection & Analysis	21276	Data Collection & Analysis	21276
Natl Water Data & Info. Access Program	996 a/	Natl Water Information Clearinghouse	996 a/
Coordination of Natl Water Data Act.	1000	Coordination of Natl Water Data Act.	1000
Regional Aquifer System Analysis	10504	Regional Aquifer System Analysis	10504
Core Program Hydrologic Research	8958	Core Program Hydrologic Research	8958
Improved Instrumentation	1683	Improved Instrumentation	1683
Water Resources Assessment	1603	Water Resources Assessment	1603
Toxic Substances Hydrology	14399	Toxic Substances Hydrology	14399
Nuclear Waste Hydrology	3430	Nuclear Waste Hydrology	3430
Acid Rain	3123	Acid Rain	3123
Scientific & Technical Publications	2262	Scientific & Technical Publications	2262
Natl Water Quality Assess. Program	18126	Natl Water Quality Assess. Program	18126
Climate Change Hydrology	6980 b/	Global Change Hydrology	6980 b/
Nat'l Water Resources Research & Info. System-Fed/State Coop Program...........	56147	Nat'l Water Resources Research & Info. System-Fed/State Coop Program...........	56147
Data Collection & Analysis	47340 c/	Data Collection & Analysis	52232
Water Use	3915	Water Use	3915 c/
Coal Hydrology	4892 c/		
Nat'l Water Resources Research & Info. System-State Res. Instit. & Research Grants Program-No Change................	5229	Nat'l Water Resources Research & Info. System-State Res. Instit. & Research Grants Program-No Change................	5229
TOTAL..............................	155716	TOTAL..............................	155716

a/The National Water Data & Information Access Program was renamed the National Water Information Clearinghouse.

b/The Climate Change Hydrology program has been renamed Global Change Hydrology.

c/The Coal Hydrology program was combined with the Federal/State Coop Data Collection & Analysis program.

Activity Summary

Activity: Water Resources Investigations

Within the Federal Government, the Water Resources Investigations program of the U.S. Geological Survey (USGS) has the principal responsibility for appraising the Nation's water resources and for providing hydrologic information. To accomplish this mission, the USGS, in cooperation with State and local governments and other Federal agencies, conducts a balanced program of surveys, investigations, and research on the status of the Nation's surface-water and ground-water resources. The components of the Water Resources Investigations program can be categorized as follows: (1) collecting, on a systematic basis, through a national network of hydrologic stations and sites, data needed for the continuing determination and evaluation of the quantity, quality, and use of the Nation's water resources; (2) conducting analytical and interpretive water-resource appraisals describing the occurrence, availability, and physical, chemical, and biological characteristics of surface water and ground water; (3) conducting inhouse and extramural supportive basic and problem-oriented research in hydraulics, hydrology, and related fields of science to improve the scientific basis for investigations and measurement techniques and to understand hydrologic systems sufficiently to quantitatively predict their response to stress, either natural or manmade; (4) disseminating the water data and the results of investigations and research through reports, computerized information services, and other forms of public releases; and (5) coordinating the activities of Federal agencies in the acquisition of water data for streams, lakes, reservoirs, estuaries, and ground waters in accordance with OMB Circular A-67.

The activities identified above are accomplished with funds requested herein, with cooperative funds provided by the States and municipalities, and with grant mechanisms established under the Water Resources Research Act of 1984. In addition, the USGS performs certain hydrologic activities, consistent with its overall mission, on a reimbursable basis for other Federal Government agencies.

The collection and analyses of hydrologic data are basic and pertinent to all water programs of the USGS, to many of the activities of other Federal, State, and local agencies, and to public and private entities concerned with water-resources development, management, and conservation. Funding support for hydrologic data collection activities is derived solely or from a combination of three principal sources: (1) the Geological Survey's appropriations; (2) matching State and local funds under the Survey's Federal-State Cooperative Program; and (3) reimbursements from other Federal agencies. The exhibit following the program element "Data Collection and Analysis" shows data on the numbers and types of hydrologic stations and their sources of support for FY 1989. The Geological Survey's resource appraisals, analytical studies, predictive studies, supportive research, model development, and model verification are dependent upon basic data on the quantity, quality, and use of surface and ground water. These activities also are basic and pertinent to the work of many other Federal, State, and local agencies and to public and private water agencies.

The results of these programs are made available to the public as publications and as releases of hydrologic data. Hydrologic data are available at offices in every State via computer terminals. The Water Resources Investigations activity prepared 1,680 reports for publication in FY 1989, with about 1,650 estimated for FY 1990 and FY 1991.

The Pilot National Water-Quality Assessment (NAWQA) Program was begun in FY 1986 and involves the conduct of seven pilot studies (four surface water and three ground water) wherein methodologies for the conduct of a national assessment are being developed and tested. Activities in all seven of these pilot studies will continue at approximately the current level of effort through FY 1990. The data collection phase of the pilot stage of the program will be completed during FY 1990, with some activity required in FY 1991 to complete reports. In FY 1991, the USGS is requesting additional funds to begin a multi-year transition to a full-scale NAWQA program. This proposal is part of the President's Water Quality Initiative and will assist in defining the factors influencing the quality of the Nation's surface-water and ground-water, including non-point sources of water-quality problems such as those associated with agricultural activities.

A new program in Global Change Hydrology was started in FY 1990. This program is part of an integrated USGS effort that responds to the need for improved earth science information with respect to the issue of Global Change, and is an integral part of the U.S. Global Change Research Program research plan developed by the interagency Committee on Earth Sciences, of the Federal Coordinating Council on Science, Engineering, and Technology, under the Office of Science and Technology Policy. Studies are being conducted on past climate conditions to gain a better understanding of climate variability and the relationship of climate to water resources. Additional funds for the Global Change Hydrology program are being requested in FY 1991 to support expanded research activities focusing on: how climate variability and change affect, and are affected by, hydrologic processes (e.g., streamflow, evapotranspiration, etc.); the development of methods for evaluating the sensitivity of diverse surface-water and ground-water systems to changing climatic conditions; and the processes associated with the generation and disposition of naturally occurring greenhouse gases.

In FY 1986, the Department of Interior (DOI) began an interbureau effort to review potential irrigation drainage concerns at DOI-constructed or managed projects at National Wildlife Refuges that receive irrigation drainage, and at other migratory bird or endangered-species management areas that receive water from Department-funded projects. To date, all funding required to carry on activities as part of this Program has been provided through the redirection of other funds appropriated to the several Bureaus involved in the Irrigation Drainage Program. The Departmental Irrigation Drainage Program is managed by the Office of the Assistant Secretary for Water and Science where funds are collected from the participating Bureaus and redistributed to finance activities as part of the program. In FY 1989, a total of $4.2 million was expended to continue the Irrigation Drainage Program. Funding requirements for this program in FY 1990 total $2.8 million, reflecting the completion of a number of reconnaissance investigations in FY 1989, and plans to conduct fewer of these studies in FY 1990. In FY 1991, funding requirements for the program would be $4,540,000, including $1,300,000 for Reconnaissance Investigations, $1,500,000 for Detailed Studies, and $1,740,000 for planning remedial action alternatives. This level of funding would allow the Program to continue at a pace compatible with the technical resources available within the participating bureaus. Of the funds requested elsewhere in the USGS budget for Water Resources Investigations,

$800,000 would be diverted in FY 1991 to provide funding support for the DOI Irrigation Drainage Program. In addition, the Bureau of Reclamation and the U.S. Fish and Wildlife Service would each provide $800,000, and the Bureau of Indian Affairs would provide $400,000 in FY 1991 funding support for Reconnaissance Investigations and Detailed Studies conducted as part of the Irrigation Drainage Program. Activities as part of the Program in FY 1991 would include the following: (a) complete the four reconnaissance investigations started in FY 1990; (b) continue the two detailed studies started in FY 1990; (c) begin five new reconnaissance investigations in FY 1991; (d) begin two new detailed studies; (e) publish results of the reconnaissance investigation completed in FY 1990; and (f) publish results of detailed studies completed in FY 1990. In addition, $1,740,000 for planning would come from a line item in the Bureau of Reclamation's budget. These funds would be used to: (a) begin planning remedial actions based on results of detailed studies completed in FY 1990; and (b) begin a planning function which consists of the identification and evaluation of remedial action alternatives, and, in certain cases, limited additional data collection.

In addition to maintaining the programs described above, funds appropriated for this activity provide for scientific and technical program management and support, including development and maintenance of automatic data processing capability. Funds appropriated to this activity also contribute to the general administrative expenses of the USGS through a user program service charge ($5,541,000). Global Change program coordination activities and Committee on Earth Sciences responsibilities within the Executive Direction subactivity are also supported within this activity ($88,000).

Justification of Program and Performance

Activity: Water Resources Investigations
Subactivity: National Water Resources Research & Information System - Federal Program

(Dollar amounts in thousands)

Program Elements		1990 Enacted to Date	1990 Adjusted Approp.	1991 Base	1991 Estimate	Inc.(+) Dec.(-) from Base
Data Collection and Analysis	$	21459	21169	21629	21276	-353
	FTE-T	592		592	586	-6
National Water Information Clearinghouse	$	3445	3398	3405	996	-2409
	FTE-T	15		15	13	-2
Coordination of National Water Data Activities	$	989	976	1000	1000	0
	FTE-T	21		21	21	0
Regional Aquifer Systems Analysis	$	11132	10982	11016	10504	-512
	FTE-T	132		132	122	-10
Core Program Hydrologic Research	$	8682	8565	8958	8958	0
	FTE-T	212		212	212	0
Improved Instrumentation	$	1679	1656	1683	1683	0
	FTE-T	7		7	7	0
Water Resources Assessment	$	1371	1352	1603	1603	0
	FTE-T	12		12	12	0
Toxic Substances Hydrology	$	14368	14174	14399	14399	0
	FTE-T	191		191	191	0
Nuclear Waste Hydrology	$	3866	3814	3860	3430	-430
	FTE-T	59		59	53	-6
Acid Rain	$	2935	2895	3123	3123	0
	FTE-T	33		33	33	0
Scientific & Tech. Pubs.	$	2259	2228	2262	2262	0
	FTE-T	29		29	29	0
National Water Quality Assessment Program	$	7135	7039	7126	18126	11000
	FTE-T	90		90	140	50
Global Change Hydrology	$	2000	1973	1980	6980	5000
	FTE-T	11		11	37	26
Total Requirements	$	81320	80221	82044	94340	12296
	FTE-T	1404		1404	1456	52

Impact of Public Law 99-177

	1990 Enacted to Date	PL 99-177 B.A. Cancellation	1990 Adjusted Approp.
Nat'l Water Resources Res & Info. System-Federal Program	81320	-1099	80221

The impact of this reduction on this subactivity will decrease the operating funds for all projects and result in curtailed field work, equipment purchases, and data analysis.

An additional FY 1990 reduction of $879,000 in Federal funds has been proposed in lieu of any attempt to collect, and then sequester, funds provided by State and local government agencies under the Federal-State Cooperative Program. This additional reduction will result in further postponements or curtailments of field work, equipment purchases, and data analysis.

Authorizations

43 U.S.C. 31	(Organic) Act of March 3, 1879, that established the Geological Survey, as amended (1962); and restated in annual appropriation acts. The most recent annual act is Public Law 101-121, October 23, 1989, "... to perform surveys, investigations, and research covering topography, geology, hydrology, and the mineral and water resources of the United States ...."
42 U.S.C. 4331 *et seq.*	National Environmental Policy Act of 1969 (NEPA), requires prior-to-action determination that any major Federal action will not have a significantly adverse effect upon the environment. Consequently, the Geological Survey is called upon to provide technical review or inputs to resource related actions proposed by other Federal agencies.
33 U.S.C. 1251 *et seq.*	Federal Water Pollution Control Act Amendments of 1972 and its successors, the Clean Water Act of 1977 and the Water Quality Act of 1987, authorize extensive water-quality planning, studies, and monitoring under the direction primarily of the Environmental Protection Agency (EPA). The Geological Survey is called upon to participate in many of these activities, partly by EPA and partly by State agencies in the Federal-State Cooperative Program. The act of 1987 includes new water-quality work concerning Chesapeake Bay, the Great Lakes, Estuary and Clean Lakes Programs, and studies of water pollution problems in aquifers.

42 U.S.C. 300f et seq.	Pursuant to the Safe Drinking Water Act, as amended, the Geological Survey and EPA have an interagency agreement covering aquifer studies conducted by the Survey relating to sole-source aquifers.
42 U.S.C. 6901 et seq.	Resource Conservation and Recovery Act of 1976 and the Hazardous and Solid Waste Amendments of 1984 require EPA to promulgate guidelines and regulations for identification and management of solid waste, including its disposal. The Geological Survey's expertise is a present and potential source of assistance to EPA in defining and predicting the hydrologic effects of waste disposal.
42 U.S.C. 8901 et seq.	Acid Precipitation Act of 1980 (Title VII of the Energy Security Act) calls for an "Acid Precipitation Program and Carbon Dioxide Study." The Geological Survey is an active participant in studies of acid precipitation as a result of prior work in this field in the Federal and Federal-State Cooperative Programs.
16 U.S.C. 3141 et seq.	As a result of the Alaska National Interest Lands Conservation Act (1980), the Geological Survey has made and may be called upon to make water studies pertinent to implementation of the act.
42 U.S.C. 9601 et seq.	Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) establishes a superfund to pay in part for the massive cleanup programs needed at sites that are heavily contaminated with toxic wastes. The Geological Survey is called upon by EPA and State agencies to investigate and determine the extent of contamination and remedial measures at some of these sites. The amendments of 1986 reauthorize for 5 years EPA's program to clean up the Nation's worst toxic dump sites.
63 Stat. 145 (P.L. 81-82, Arkansas River Compact), 65 Stat. 663 (P.L. 82-231, Yellowstone River Compact)	Congress has granted its consent to many interstate water compacts. For such compacts, the Geological Survey provides administrative support for the Federal representative, usually appointed by the President. Also, the Geological Survey collects hydrologic data for 25 interstate compacts. The data collection is supported partly by the Federal Program and partly by the Federal-State Cooperative Program.
42 U.S.C. 2021b et seq.	Low-Level Radioactive Waste Policy Act (1980) required intra-State or multi-State (regional) arrangements for disposal of low-level radioactive waste by July 1, 1986. The Geological Survey provides geohydrologic research and technology to

Federal and State agencies developing plans for low-level waste management. The amending Act of 1985 included approval of seven interstate compacts.

42 U.S.C 10101 et seq.	Nuclear Waste Policy Act of 1982 on disposal of high-level radioactive wastes defines DOE as lead agency with responsibility for siting, building, and operating high-level radioactive-waste repositories. The law requires participation by the Geological Survey in a consultative and review role to the DOE. The Nuclear Waste Policy Amendments Act of 1987 (Title V of the Omnibus Budget Reconciliation Act of 1987) identifies the Yucca Mountain, Nevada, site for development of the first repository, and provides that the Department of Energy conduct a survey of potentially suitable sites for a monitored retrievable storage (MRS) facility.
43 U.S.C. 1701 et seq.	As part of the implementation of The Federal Land Policy and Management Act of 1976, the Bureau of Land Management (BLM) enlists the Geological Survey's hydrologic data base and expertise in connection with BLM's responsibility regarding coal reserves on and beneath Federal lands.
30 U.S.C. 1201 et seq.	Surface Mining Control and Reclamation Act of 1977, as amended, established the Office of Surface Mining Reclamation and Enforcement (OSM). OSM depends in part upon the Geological Survey for a determination of the probable hydrologic consequences of mining and reclamation operations.
43 U.S.C. 390g et seq.	High Plains States Groundwater Demonstration Program Act of 1983, authorizes the Bureau of Reclamation to carry out a 5-year program to investigate and establish demonstration projects for ground-water recharge of aquifers in eight "High Plains States" (Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, and Wyoming). While carrying out this program the Bureau is directed to "consult with" the U.S. Geological Survey and others.
42 U.S.C. 10301 note	Section 1121, the Water Resources Development Act of 1986 (P.L. 99-662), amends the Water Resources Research Act of 1984 by adding, as title III, "Ogallala Aquifer Research and Development."

Data Collection and Analysis

Objective: To collect, analyze, interpret, and make available data and information on the quantity, quality, and location of the Nation's ground and surface waters. Specific objectives are:

- To operate surface-water and ground-water data collection networks with emphasis on information about water-short areas, urban complexes, energy development, floods, droughts, and environmental concerns.
- To provide information on the quality of the water of the Nation and to identify and interpret changes and trends in the quantity and quality of the Nation's major rivers using data from the National Stream Quality Accounting Network and other water-quality and streamflow data networks.
- To operate a national network of hydrologic benchmark stations to study time-dependent trends and to serve as controls for distinguishing natural from man-caused changes in hydrologic regimes.
- To provide the hydrologic data needed in response to decrees of Federal courts and river basin compacts.
- To provide the hydrologic data needed in areas where the Federal Government is the principal land owner.
- To provide review and comments on environmental documents and develop environmental policy and guidance for the Geological Survey.
- To provide training and operational support for water-resources activities.

Base Program: Although the information is used throughout the Nation's water community, the water-data collection, resources investigation, and research activities included in this program component support areas of the Geological Survey's National Water Resources Research and Information System in which the Federal interest is paramount, including compacts, public lands, rivers and aquifers that cross State boundaries, and other areas of interstate, national, or international concern.

Many data have been and are being collected, yet there remain some deficiencies in the temporal and geographical distribution and in the kinds of data available. This situation exists not only because of growth and shifts of the population and depletion of some local sources of water, but also because of the need for development and management of water resources on a regional and national basis which requires supporting data. The entire stream-gaging program of the USGS, which includes gaging stations funded by the Federal Program, the Federal-State Cooperative Program, and the reimbursable program was systematically analyzed to improve its effectiveness. This analysis, which includes the identification of alternate methods of providing streamflow information such as flow routing and statistical regression models, was completed in 1988, and the findings are in the process of being summarized in a report.

Details on the level of hydrologic data collection activities are included in Figure W-1 (page GS-219). The following activities are modified somewhat from year to year in response to the increasing and changing stresses on the Nation's water systems.

- Streamflow and river, lake, and reservoir stage will be measured.

- Ground-water levels and pumpage will be measured.

- Data will be collected on major floods during the year.

- Operation of the National Stream Quality Accounting Network and the Hydrologic Benchmark network will continue in FY 1991:

  -- The National Stream Quality Accounting Network (NASQAN), which began in 1973, provides a basis for continuously assessing the quality of major rivers in the United States with respect to both natural and human induced factors. Most NASQAN stations are located on large rivers to measure the quantity and quality of water moving from one drainage basin to another. Existing station locations were chosen to represent hydrologic accounting units according to a hydrologic subdivision of the United States. NASQAN data thus provide a regional and national picture of water quality, as influenced by human activities, in the major rivers. Some of these NASQAN stations will constitute the "core" stations in the National Water-Quality Assessment Program.

  -- The Hydrologic Benchmark Network includes the collection of water-quantity data at 59 sites and water-quality data at 52 of the 59 sites in small drainage basins to provide background hydrologic information for areas that are virtually unaffected by human activities.

  -- Analysis of trends at NASQAN and Hydrologic Benchmark stations have shown a relationship between: (1) the decreased use of lead in gasoline and a decrease in the lead found in water at NASQAN stations; (2) the emission of sulfur dioxide from fossil-fuel powered plants and a reduction in the pH and alkalinity at Benchmark stations in the northeastern and southeastern United States; (3) the increased atmospheric deposition of nitrate and the increased use of nitrate fertilizers in the Midwest through the upper Mississippi, Ohio, New England, and in the Great Lakes area; (4) the increased presence of sodium and chloride in the water and the application of salt on roads, especially in the Northeast; and (5) the decline in fecal bacteria at NASQAN stations and the upgrading of the level of treatment at waste-water treatment plants.

- Water quality will be determined on a scheduled, long-term basis at about 500 surface-water and ground-water sites. Sediment records also will be obtained.

- Water-quality and water-quantity records will continue to be collected at about 80 stations located on streams at international boundaries, interstate compact points, and at other sites of specific interest to the United States.

- Maintenance and rehabilitation of network stations will continue. Damage due to weather, vandalism, and aging require reconstruction, relocation, and/or maintenance at frequent intervals at many sites. Occasionally, gaging stations require more extensive maintenance and improvements for longevity and safety of personnel who must enter the structures to do their work. Discharge measuring cableways that have been exposed to moisture and extreme temperatures for many years are costly to maintain or replace. Continuity of data collection is assured at a well maintained station, and the long-term costs for station maintenance are less when routine maintenance is performed.

- Continue to compile the data gathered by USGS districts and other Federal, State, and local sources to define current conditions in the Ogallala aquifer and to investigate and describe factors which produce changes in the aquifer conditions, and produce an annual report.
- Long-term, daily-sampled sediment stations will continue to be operated to help understand fluvial sediment processes and to help detect trends in the transport of fluvial sediments. The long-term data have transfer value to other sites in the same environment.
- Index ground-water wells, located nationwide, will be measured to provide information to the public in a monthly report on current national water conditions. The report has a circulation of about 5,000, including Congressmen, their staffs, other Federal agencies, State and local agencies, private companies, universities, and others.
- The review and analysis of environmental documents will be conducted, including the review, analysis, and preparation of USGS comments on environmental documents; preparation and maintenance of National Environmental Policy Act (NEPA) guidance; and monitoring USGS compliance with NEPA.
- Assistance will be provided for the professional and technical development of the Survey's hydrologic work force and to support the chairpersons of eight interstate and/or international water compacts.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adj Approp	FY 1991 Base	FY 1991 Estimate
Data Collection Activities	(See Figure W-1, page GS-219)			
Review Environmental Documents	1,500	1,450	1,500	1,450
Training Sessions	34	33	34	33
Support for Interstate and International Water Compacts	8	8	8	8

Average unit costs for selected program outputs in FY 1991 Estimate:

Review Environmental Documents	1,450 @	$335
Training	33 @	$25,000
Support for Interstate/International Compacts	8 @	$6,000

Decrease for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	21,629	21,276	-353
FTE	592	586	-6

In 1991, the Survey will discontinue about 30 (or about 5 percent) of the continuous recording streamflow stations supported by this program element, and rescale and/or curtail some data analysis and interpretation projects. The types and locations of stations to be discontinued would have to be determined in consultation with cooperating agencies and users of information generated from the water-data networks. Efforts would be made to select the types and locations of data-collection stations to be discontinued so as to minimize the impact on the needs of Federal, State, and local agencies for hydrologic information.

Distribution of change by object class:

The object class detail for the proposed $353,000 decrease is as follows:

	FTE	Amount
Personnel Compensation	6	$137,322
Personnel Benefits		30,897
Travel and Transportation of Persons		17,650
Transportation of Things		7,060
Communications, Utilities, and Misc. Charges		28,590
Printing and Reproduction		3,530
Other Services		84,421
Supplies and Materials		3,530
Equipment		40,000
Total	6	$353,000

WATER DATA COLLECTION ACTIVITIES OF THE U.S. GEOLOGICAL SURVEY

Types of Stations

CONTINUOUS RECORD: The station is instrumented to monitor hydrologic conditions continually and, in some instances, transmit data in near real time.

PARTIAL RECORD: Hydrologic information is collected only during selected periods, for example, during floods.

SCHEDULED, LONG-TERM: Hydrologic information is collected on a fixed schedule over a long period to detect trends. With respect to Surface-Water Quality and Ground-Water Levels, continuous recording stations are included in this category.

SHORT-TERM OR PROJECT: Hydrologic information is collected to meet the needs of a specific study. Data supplement those available from scheduled, long-term; continuous record; and partial-record stations.

Number of Stations

COLUMN A - Stations totally supported by funds appropriated to the Geological Survey Federal Program subactivity.

COLUMN B - Stations partially supported by funds appropriated to the Geological Survey Federal-State Cooperative Program subactivity.

COLUMN C -Stations totally supported by reimbursement from other Federal agencies.

COLUMN D - Stations supported by a combination of two or more of the above.

Types of Stations	FY 1989 -- Number of Stations				
	A.	B.	C.	D.	
SURFACE WATER	Federal Program	Federal-State Cooperative Program	Other Federal Agencies	Combined Support	Total
Discharge					
Continuous record	485	3,796	1,918	1,040	7,239
Partial record	27	2,887	311	201	3,426
Stage Only--Streams					
Continuous record	12	236	286	28	562
Partial record	9	230	38	30	307
Stage Only--Lakes/Reservoirs					
Continuous record	20	318	401	109	848
Partial record	11	243	79	12	345
Quality					
Scheduled, long-term	409	1,322	480	130	2,341
Short-term or project	69	789	340	111	1,309
GROUND WATER					
Water Levels					
Scheduled, long-term	1,128	21,322	1,159	1,675	25,284
Short-term or project	150	5,502	2,349	1,397	9,398
Quality					
Scheduled, long-term	156	3,651	446	219	4,472
Short-term or project	578	2,397	1,211	165	4,351

Figure W-1

National Water Information Clearinghouse Program

Objective: To improve and expand the availability of water resources information to the rapidly expanding Federal and non-Federal user community; to facilitate better use of available resources for water information sharing and management at all levels of government; and to develop and maintain a national program to inventory, archive, and widely disseminate information about water resources, related research, and technology development.

The National Water Information Clearinghouse would be designed to improve and expand the availability of water resources information to traditional users and to the rapidly growing community of new users. This new clientele of water resources information users includes public and private water managers, regulators, and the regulated community itself. The Clearinghouse is intended to: (a) upgrade and modernize the outdated information systems that are cumbersome to use and lack the capacity to service the growing user community effectively; and (b) strengthen coordination and collaboration and improve access to existing sources of information and clearinghouse services, both public and private.

Base Program: The USGS provides clearinghouse services through a network of National Water Data Exchange (NAWDEX) Assistance Centers located in each State, through its information abstracting services, through more than 100 other USGS water resources field offices, and through the 54 State Water Resources Research Institutes.

The USGS conducts water resources information activities in collaboration with more than 1,000 Federal, State and local agencies, and provides information links to more than 400 Federal, State, and university water-data bases by means of 75 NAWDEX assistance centers. These Assistance Centers respond to more than 80,000 user requests per year. The USGS also maintains a data base of over 220,000 abstracts and produces bibliographies covering much of the world's water resources research literature. In FY 1989, 12,000 new abstracts were processed and incorporated into the data base. A monthly publication, Selected Water Resources Abstracts, is distributed nationally and internationally by the USGS. The abstract data base is searchable via commercially available computer systems. A bibliographic user service is also made available by the USGS to all Federal and State agencies, universities, and other organizations that use water resources information.

Among its other data dissemination activities, the USGS maintains computerized inventories of hydrologic data and data sources (e.g., the Master Water Data Index and the Water Data Sources Directory) which serve as the national catalog of information on water data. The Master Water Data Index provides information about data-collection sites, types of data, and frequency of data collection performed by Federal, State, local, and private organizations, and is a means by which water data are identified for referrals and subsequent retrievals.

In addition, the USGS coordinates direct access to the clearinghouse data bases and the two major Federal water-data computer files: (1) the Geological Survey's National Water Data Storage and Retrieval System (WATSTORE); and (2) the Environmental Protection Agency's Storage and Retrieval System (STORET). These two major data systems contain the largest water data bases of national scope.

To avoid costly duplication of effort among Federal agencies, data exchange programs have been established with other bureaus of the Department of the Interior, the National Oceanic and Atmospheric Administration, the Environmental Protection Agency, the Canadian Department of the Environment, and about a dozen States. Through FY 1989, more than 480,000 data sites were indexed. Over 1,800 water-oriented organizations have been identified as potential information sources in the Water Data Sources Directory.

Related information transfer activities are conducted under the auspices of other USGS programs. The Water Resources Research Institutes, administered by the USGS, conduct research on water-related issues and provide educational and information transfer services on a wide range of water issues. In addition, the Office of Water Data Coordination (OWDC) acts to facilitate interagency coordination of hydrologic data collection, processing, storage, and dissemination under provisions of OMB Circular A-67.

Funds appropriated in FY 1990 for clearinghouse activities are being used to begin upgrading and modernizing existing water resources information systems that were established in the 1970's, and to conduct a series of program development workshops and seminars for Federal, State, and local agencies to coordinate planning for clearinghouse activities that are more responsive to the needs of the user community.

Decrease for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	3,405	996	-2,409
FTE	15	13	-2

The abstracting of scientific literature, modernization of information technology, and program development activities associated with the establishment of a National Clearinghouse Program for water data will be suspended.

Distribution of change by object class:

The object class detail for the proposed $2,409,000 decrease is as follows:

	FTE	Amount
Personnel Compensation ----------------	2	$ 115,393
Personnel Benefits --------------------		25,963
Travel and Transportation of Persons ---		150,000
Transportation of Things --------------		48,180
Communications, Utilities, and Misc. Charges -----------------------		78,270
Printing and Reproduction -------------		75,000
Other Services ------------------------		1,666,194
Supplies and Materials ----------------		50,000
Equipment -----------------------------		200,000
Total -----------------------	2	$2,409,000

Coordination of National Water Data Activities

Objective: To coordinate the water-data acquisition activities of all Federal agencies. Office of Management and Budget Circular A-67 assigns lead responsibility for water-data coordination to the Department of the Interior. Primary responsibility is further delegated to the Office of Water Data Coordination (OWDC) within the Geological Survey. Major mandates of Circular A-67 include: (1) exercising leadership in achieving effective coordination of water-data acquisition activities (such activities to include data collection, processing, publication, storage, and distribution); (2) conducting a continuing and systematic review of Federal water-data acquisition activities and maintaining a plan for these activities; (3) maintaining a central catalog of information on water data for the Nation; (4) providing information on the availability of water data and facilitating interagency consultation in the acquisition of water data.

Base Program: The OWDC meets these objectives by: (1) annually collecting, analyzing, and distributing information on the water-data needs, plans, and acquisition activities of Federal agencies and selected non-Federal entities; (2) operating a coordination network of headquarters and field committees and staffs for sharing information and for cooperative work on water-data coordination activities; (3) reviewing and documenting the comparability and compatibility of water data; (4) investigating and reporting on the usability and capability of water-data bases and access systems; (5) monitoring, improving, and developing methods for making data available to users; (6) recording changes in the national network of stations for collection of data on the quality and quantity of streams, lakes, reservoirs, estuaries, and ground waters; and (7) serving as Executive Secretariat to the (Federal) Interagency Advisory Committee on Water Data and the (non-Federal) Advisory Committee on Water Data for Public Use.

The program is carried out in cooperation with other organizational units of the Geological Survey at the headquarters and field level, 30 other Federal organizations, and hundreds of non-Federal entities. They provide significant technical assistance, policy advice, and other resources to assure the success of the program. Member organizations are as follows:

- Interagency Advisory Committee on Water Data: Department of Agriculture; Department of Commerce; Department of Defense; Department of Energy; Department of Housing and Urban Development; Department of Interior; Department of Transportation; and Independent Agencies (i.e., Council on Environmental Quality, Environmental Protection Agency, Federal Emergency Management Agency, International Boundary and Water Commission, International Joint Commission, Nuclear Regulatory Commission, and Tennessee Valley Authority).

- Advisory Committee on Water Data for Public Use: American Society of Civil Engineers; American Society for Testing and Materials; American Water Resources Association; American Water Works Association; Association of American State Geologists; Association of State and Interstate Water Pollution Control Administrators; Association of Western State Engineers; Chemical Manufacturers Association; Council of State Governments; Freshwater Foundation; Interstate Conference on Water Policy; National Association of Conservation Districts; National Water Resources

Association; National Water Well Association; Universities Council on Water Resources; and Water Pollution Control Federation.

Specific activities and accomplishments include the following:

- Convene regular and special meetings of the Advisory Committees.

  -- In FY 1989, the Interagency Advisory Committee on Water Data met to discuss and develop recommendations for a wide range of issues and problems related to nonpoint-source pollution management.

  -- In FY 1989, the Advisory Committee on Water Data for Public Use met to develop recommendations on agricultural water quality information needs, water data and information dissemination priorities, and water resources data collection network operations.

- Continued in FY 1989 a project to develop a spatially-referenced bibliography for ground-water information in the Great Lakes area.

- Initiated in FY 1989 and will continue in FY 1990 a project to provide educational materials on procedures for acquiring ground-water information.

- Initiated in FY 1989 and plan to complete in FY 1990 a cooperative effort with the Satellite Telemetry Interagency Working Group and the Office of the Federal Coordinator for Meteorology to develop and publish a National Geostationary Operational Environmental Satellite (GOES) Data Collection System Operations Plan.

- In cooperation with the Universities Council on Water Resources, sponsored a workshop on the information dissemination capabilities of the Water Resources Research Institutes.

- Published and distributed the "Federal Glossary of Selected Terms, Subsurface-Water Flow and Solute Transport." This glossary will facilitate better communications for ground-water protection.

- Maintain a "National Handbook of Recommended Methods for Water-Data Acquisition," and update as necessary to provide current information. To date, ten chapters of the Handbook have been published and/or revised, and one is scheduled for publication in FY 1990: Surface Water; Ground Water; Sediment; Biologic and Microbiologic Quality of Surface and Ground Water; Chemical and Physical Quality of Water and Sediment; Soil Water; Physical Basin Characteristics for Hydrologic Analysis; Evaporation and Transpiration; Snow and Ice; Hydrometeorological Observations; and Water Use (to be distributed in FY 1990).

- Continue a cooperative project with the Environmental Protection Agency and the American Society of Testing and Materials (ASTM) to accelerate the development of a consensus on ground-water monitoring standards. Twenty newly proposed standards are currently in the ASTM balloting process.

- Complete in FY 1990 an evaluation of the Nation's surface-water quantity information system.

- Completed a cooperative project with the Interstate Conference on Water Policy. Conducted a series of four regional ground-water information management workshops, attended by over 200 participants from more than 30 States.

- Initiated studies in FY 1989 and will continue to FY 1992 to evaluate and improve the catalog of information on water data, including systems to display, update, and analyze the data.

- In 1991, sponsor the Federal Conference on Sedimentation. More than 300 participants from the United States and abroad are expected to participate.

Regional Aquifer-System Analysis (RASA)

Objective: To evaluate the availability and general chemical quality of ground water in regional aquifers and to understand the ground-water flow systems, including the recharge-discharge characteristics of the aquifers and the hydrogeologic and geochemical controls that govern the response of the aquifer systems to stress, thus providing the essential information and criteria required for development and management of the resource. To accomplish these objectives, the Regional Aquifer-System Analysis Program supports basic and applied research, assembles existing data, gathers new data, develops and tests models of regional ground-water systems, and disseminates the results of these activities in the form of scientific reports and computer simulation models.

Base Program: This program is currently developing information on the quantity and quality of water in regional ground-water flow systems, which together represent a significant part of the Nation's water supply. Twenty-eight of the most important aquifer systems have been identified for study, of which 16 have been completed as of the end of FY 1989. Plans are to complete the remaining 12 aquifer studies by the end of FY 1995. Depletion of surface-water and ground-water supplies in some regions has reached significant proportions. Moreover, large increases in withdrawals from the Nation's ground-water systems are expected to occur during the coming decade as a result of increased irrigation, water needs for energy and industrialization, water demands of urbanizing areas, limited new surface-reservoir capacity, and the desire to establish drought resistant water-supply systems. In some parts of the country, increased pumpage will have an impact on Federal lands and on Federal investments in land and water development. Cities, industries, agriculture, communities, parks, recreation, and fish and wildlife will be impacted. Decreased agricultural production is an example of the economic significance of these impacts.

PHASE I

The basic study of an aquifer system is designated as a Phase I investigation. Although each investigation is designed to fit the particular problems of the study area, the general approach is to develop a computer simulation for the overall aquifer system, supported by more detailed simulations of local or subregional areas of interest. These simulations assist in forming an understanding of the natural (prepumped) flow regime and the changes brought about by human activities. They also provide a means of evaluating the impacts of future increases in pumpage, artificial recharge, or other stresses, and provide much of the information needed for water planning and management. Hydraulic effects are simulated in all studies. In some studies, certain associated effects, such as land subsidence, are the subject of corollary simulations. The simulations are based upon a full assemblage of existing data and the collection of data as required to fill critical gaps in the available information, which in some cases are extensive. The studies consider water quality as well as quantity; and, in each case, efforts are made to interpret the observed water-quality distribution in terms of the original flow regime and the changes that have occurred or that might occur in response to human activities and/or natural stresses. Products from each study consist of a series of reports, beginning with summaries of data collected and assembled, and culminating in interpretive reports including the results of simulations.

As of the end of FY 1989, field activities and most reports associated with 16 of 28 Phase I aquifer investigations have been completed since the beginning of the program in FY 1978. Low level efforts related to the completion and publication of reports will continue for a year or so with respect to those studies for which field activities have just concluded. The 16 studies for which field activities have been completed are:

High Plains
Northern Great Plains
Central Valley, California
Floridan
Snake River Plain
Southwest Alluvial Basins
Northern Midwest
Central Midwest
Great Basin, Nevada/Utah
Atlantic Coastal Plain
Southeast Coastal Plain
Upper Colorado
Northeast Glacial Valleys
Oahu, Hawaii
Columbia Plateau, Washington/Oregon
Caribbean Islands

The number of ongoing and planned Phase I investigations are as follows:

FY 1989 Enacted (9)	FY 1990 Adj Approp. (9)	FY 1991 Base Program (10)
NE Glacial Valleys		
Caribbean Islands		
Gulf Coastal Plain	Gulf Coastal Plain	Gulf Coastal Plain
Michigan Basin	Michigan Basin	Michigan Basin
San Juan Basin, NM/CO	San Juan Basin, NM/CO	San Juan Basin, NM/CO
Central Texas	Central Texas	Central Texas
Ohio-Ind. Carbonates	Ohio-Ind. Carbonates	Ohio-Ind. Carbonates
Appalachian Valleys	Appalachian Valleys	Appalachian Valleys
Puget-Williamette	Puget-Williamette	Puget-Williamette
	Alluvial Basin, S. Calif.	Alluvial Basin, S. Calif.
	N. Rockies Intermontane	N. Rockies Intermontane
		Illinois Basin

Annual costs for Phase I investigations range from $500,000 to $1,500,000, reflecting the stage of the multi-year investigation and the size and complexity of the area under study.

PHASE II

In some instances, where technical problems of particular importance have been identified during the course of Phase I investigations, and where the technical information and analysis are unlikely to be developed under other programs, a second phase of project activity was started. Such Phase II studies are of limited scope and are restricted to activities that promise exceptional scientific return or contribution to major improvements of ground-water resources management. Two ongoing Phase II studies will continue in FY 1990 and FY 1991 as described below; plans are to defer consideration of any new Phase II studies through at least FY 1991 in favor of applying funds towards the completion of the remaining Phase I studies by the end of FY 1995.

- Snake River Plain--quantify the flow system in the Thousand Spring and American Falls area related to allocation of water rights by State agencies.
- Southwest Alluvial Basins--study the mechanics of vertical fissures created as a result of land subsidence associated with the withdrawal of ground water in Central Arizona; further study of geochemical processes related to ground-water flow in intermontane basins in the southwestern United States.

Annual costs for Phase II investigations range from $400,000 to $600,000.

Some recent accomplishments of the RASA Program include:

- The use of computer models to simulate the dynamic three-dimensional flow in the regional aquifers. During the investigations, simulation capabilities have evolved from the normal flow simulations to incorporating the effects of temperature in deep circulation zones, the effects of salt concentration on ground-water flow, the effects of wells penetrating many aquifer layers that "short circuit" flow systems of several separate individual aquifers, the interaction between streamflow and ground-water flow, and land subsidence due to withdrawals.
- The analysis of digitized satellite imagery to establish the distribution and intensity of agriculture irrigation and, with further interpretation, the magnitude of ground-water pumpage.
- The development of geochemical concepts and models that evaluate interactions between solutes in water and the minerals in aquifer material, and the use of stable isotopes to infer the origin and age of ground water.
- The first segment of a "Ground Water Atlas of the United States" has been completed, with publication planned for early summer, 1990. This segment identifies all of the important aquifers underlying the States of Florida, Alabama, South Carolina, and Georgia, and presents maps and diagrams that locate and describe the properties of each aquifer. When complete, the Atlas will be comprised of 13 segments covering the conterminous United States, Alaska, Hawaii, and Puerto Rico.
- Provided information to Federal, State, and local agencies, for example:

-- **New Jersey Department of Environmental Protection used a flow model developed under the Atlantic Coastal Plain RASA study to manage the Coastal Plain aquifer in New Jersey in designated critical areas.**

-- Bureau of Reclamation, Fish and Wildlife Service, U.S. Environmental Protection Agency, and U.S. Department of Agriculture used RASA information to evaluate impacts on water resources resulting from agricultural practices in the San Joaquin Valley of California.

-- South Carolina Department of Health and Environmental Control used RASA information to determine the relationship between waste-disposal sites and well locations.

-- Internal Revenue Service used information from the High Plains RASA study to evaluate tax depletion allowance.

-- Federal Land Bank used depth-to-water information resulting from the High Plains RASA study to appraise farm lands on the High Plains.

-- Idaho water agencies used information resulting from the Snake River Plain RASA study in negotiations of water rights between irrigators and hydropower companies.

-- Idaho Department of Health and Welfare used Snake River Plain RASA information in the development of a Snake River aquifer management strategy and ground-water quality management plan.

During the period FY 1978-1989, more than 600 reports, hydrologic atlases, and scientific journal articles have been prepared by the RASA Program. Examples of recent reports are:

o "Mapping irrigated cropland from LANDSAT data for determination of water use from the High Plains Aquifer in parts of Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, and Wyoming."

o "Summary of the High Plains regional aquifer-system analysis in parts of Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, and Wyoming."

o "The regional aquifer system underlying the Northern Great Plains in parts of Montana, North Dakota, South Dakota, and Wyoming -- Summary."

o "Summary of the hydrology of the Floridan aquifer system in Florida and in parts of Georgia, South Carolina, and Alabama."

o "Bacterial metabolism and delta carbon-13 composition of ground water, Floridan aquifer system, South Carolina."

o "Hydrologic and geologic factors affecting land subsidence near Eloy, Arizona."

o "Water withdrawn for irrigation in 1980 on the Snake River Plain, Idaho and eastern Oregon."

- "Regional aquifers and petroleum in the Williston Basin region of the United States."
- "Flow characteristics for selected springs and streams in the Ozark subregion, Arkansas, Kansas, Missouri, and Oklahoma."
- "Bacteria in deep coastal plain sediments of Maryland: A possible source of CO_2 to ground water."
- "Comparison of irrigation pumpage and change in water storage of the High Plains aquifer in Castro and Palmer Counties, Texas, 1975-1983."
- "Geochemistry of the Floridan Aquifer system in Florida and in parts of Georgia, South Carolina, and Alabama."
- "Geochemistry of ground water in alluvial basins of Arizona and adjacent parts of Nevada, New Mexico, and California."

Decrease for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	11,016	10,504	-512
FTE	132	122	-10

The 1991 request will keep the ongoing 9 studies on schedule. No new studies will be initiated.

Distribution of change by object class:

The object class detail for the proposed $512,000 decrease is as follows:

	FTE	Amount
Personnel Compensation ----------------	10	$260,082
Personnel Benefits --------------------		58,518
Travel and Transportation of Persons ---		25,000
Transportation of Things --------------		10,000
Communications, Utilities, and Misc. Charges -----------------------		45,400
Printing and Reproduction -------------		5,000
Other Services ------------------------		83,000
Supplies and Materials ----------------		5,000
Equipment -----------------------------		20,000
Total -----------------------	10	$512,000

Core Program Hydrologic Research

Objective: To improve knowledge of the fundamental processes that affect or control the movement of water, sediment, and chemical constituents through hydrologic systems so that appropriate procedures can be developed to predict how natural or man-induced stresses alter the hydrologic systems, information vital to solving critical water problems.

Base Program: Basic and problem oriented research is conducted in support of the mission of the Geological Survey and is an integral part of all program elements. Through the years, many of the Geological Survey's major initiatives that are directed toward identifying and defining the extent of existing and emerging national water-resources problems had their origins in the Core Research Program. The hydrologic information provided by the USGS is relevant today in assisting the Nation to solve its water problems because of a conscious decision made in years past to invest in research. The Core Research Program is designed to encourage pursuit of a diverse agenda of research topics aimed at providing new knowledge and insights into varied and complex hydrologic phenomena, processes, and systems that are not well understood or defined. The emphasis of these research activities changes through time, reflecting the emergence of promising new areas of inquiry and the demand for new tools and techniques with which to address water-resources issues and problems. Knowledge gained and methodologies developed in this program have high transfer value to all operational aspects of the hydrologic investigations of the USGS, the water oriented investigations and operations of other agencies, and to the general scientific community.

The six principal research disciplines are:

1. GROUND-WATER CHEMISTRY--Investigates inorganic, organic, and biochemical reactions affecting water quality in relation to mineralogical, geochemical, and hydrologic conditions in the ground-water environment.

2. SURFACE-WATER CHEMISTRY--Involves an assessment of natural and contaminant chemicals in water and sediment, and study of fundamental chemical and biochemical processes that affect the movement of organic and inorganic solutes and gases through primarily surface-water systems.

3. GROUND-WATER HYDROLOGY--Develops process understanding and techniques to evaluate and predict the quantity and quality of water moving through porous and fractured media.

4. SURFACE-WATER HYDROLOGY--Provides findings to improve the ability to predict the occurrence, distribution, movement, and quantity of the Nation's surface-water resources.

5. GEOMORPHOLOGY AND SEDIMENT TRANSPORT--Focuses on understanding stream-channel morphology and erosional processes that govern the source, mobility, and deposition of sediment.

6. ECOLOGY--Studies biological and microbiological processes that affect the quality of water.

Highlights of current research activities and recent accomplishments follow:

- Studies of tree rings from trees growing over shallow ground water affected by contaminated discharges of spills are being made to determine the timing of the contamination based on detailed analyses of chemical elements within annual growth rings. These data, coupled with measurements of the current extent of the contamination, are being used to predict the movement of contaminated plumes.

- A study is being conducted to assess the interaction of sediment with natural and manmade constituents in the Mississippi River system. Objectives include determination of the storage and remobilization of sediments and their associated constituents. The study also will attempt to determine the contribution, traceability, and fate of constituents from the Missouri and Ohio River systems, above and below their junctions with the Mississippi River.

- A recently discovered 300,000-year record of carbon and oxygen isotopes from a calcite vein in Devils Hole, Nevada, indicates that the last interglacial stage began more than 150,000 years ago. This is at least 20,000 years earlier than indicated by marine records and suggests that current theories on the causes of pleistocene ice ages need to be reevaluated.

- Clay minerals play a major role in determining the composition of water, whether in streams, the soil zone, or in the saturated zone of ground water. Investigations into the fundamental properties of clay minerals have led to a new understanding of the structure, chemistry, stability, and chemical reactivity of several clay minerals. An outgrowth of these fundamental studies has been the development of a new class of slow release, non-polluting fertilizer, which may have particular applicability for marginally productive soils. Two Native American Indian reservations are planning a pilot program to test the fertilizer.

- In a study to chemically characterize dissolved organic material (DOM) in Antarctic desert lakes, which have been ice covered since before the industrial revolution, the DOM has been shown to be similar to oceanic DOM, but chemically distinct from DOM in terrestrial temperate lakes. This study is providing a unique opportunity for examining DOM derived solely from microbial productivity and providing values to which DOM from man-influenced aquatic environments can be compared.

- Past research prompted some of the early development of mathematical flow models capable of describing the response of an aquifer system to a wide range of hydraulic stresses. Consideration of chemical reactions (transport equations) was later coupled with flow equations and used to predict the movement of ground-water contaminants. Such models are currently being widely used in hazardous and radioactive-waste programs within and outside the USGS. Research leading to greater process understanding coupled with model enhancement is still a major endeavor.

- Fulvic and humic acids are naturally occurring organics present in all waters. Because these substances are known to bind trace metals, pesticides, and other organic compounds, knowledge of them is vital to our understanding of the reactions of contaminants in water. The detailed set of structural analyses recently obtained with the help of nuclear magnetic resonance spectrometry is expected to greatly aid in the understanding of their reactions.

- Studies using oxygen and hydrogen isotopes have permitted the determination of changes in the relative amounts of pre-storm soil water and new rainfall runoff during a major storm event. Until displaced by the next storm, water in the soil has an opportunity to react with the soil. Understanding this process is vital to understanding the interaction of the soil to acid rain or other quality-impaired water.

- Satellite measurements indicate that the extent of polar sea ice has shrunk by 6 percent over the last 15 years. Although the total surface area of ice does not appear to have changed, the maximum extent (i.e., the maximum area containing the ice pack around the Arctic plus the Antarctic, an area which also includes enclosed regions of open water) has decreased. With only 15 years of satellite data, the decrease may be due to unknown natural fluctuations or perhaps to warmer ocean temperatures causing the ice to melt closer to the poles, thus reducing the perimeter.

- Bacteria recently isolated from sediments in the Potomac River have been found to convert organic acids to carbon dioxide and ferric iron to magnetite, an iron ore mineral important for its magnetic properties. Unlike previously discovered bacteria that produce magnetite in the presence of oxygen, these bacteria are found in unoxygenated environments and may explain the formation of magnetite in deep ancient sediments where no oxygen was available.

- There have been no reliable means of age dating ground waters recharged over the past 10 to 50 years, and yet it is recognized that water supplies receiving recharge today are valuable renewable resources but more vulnerable to contamination than older waters. Freon compounds have been released into the atmosphere in increasing amounts since about 1930 and provide reliable tracers of modern recharge. A method to determine parts per trillion levels of freon compounds in ground water has been developed and studies are being conducted to use freon to evaluate water age and thus assess the potential for contamination of ground water.

- Studies are being made of a species of clam that was found to have been newly introduced to San Francisco Bay from Asia and to be spreading rapidly and widely throughout northern San Francisco Bay; these quantitative studies of its distribution, reproduction, etc. are important since the clam is thought to have possible major ecological consequences by affecting the estuary's food cycle.

- Studies have shown that the circulation of air through fractures in a thick unsaturated zone (i.e., the zone above the water table) probably is controlled by seasonal air temperature. Cold, dry air enters a hillside in the winter and picks up heat and moisture as it moves through the rock and rises to discharge at the hillcrest, with the circulation reversed and the hot air cooled in the summer. This phenomenon is a likely explanation for the observation that radon accumulation tends to be larger in the basements of structures on hillcrests than it does in those in valleys.

It also has implications for the transport of other volatiles, including wastes stored in the unsaturated zone in fractured media.

o Research related to the bioavailability of trace metal pollutants associated with estuarine sediments has shown that the differences of sediment geochemistry in different estuaries affects the bio-uptake of trace metals (e.g., biota in estuaries with sediments that are high in iron are less likely to show high lead accumulation). Estuarine research has found that South San Francisco Bay is a nutrient-rich estuary with a surprisingly small amount of algae; this finding has led to the development of a hypothesis, now being tested, that filter feeders in the sediments (e.g., clams, mussels, etc.) rapidly consume the algae. If true, the hypothesis would imply that the food-chain dynamics of estuaries may be very different from lakes and the open ocean, and that such estuaries may have a natural biological control on algal amounts.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adj Approp	FY 1991 Base	FY 1991 Estimate
Research Studies or Projects underway	36	35	35	35

Average unit costs for selected program outputs for FY 1991 Estimate:

Research Studies or Projects underway	35 @ $255,000

Improved Instrumentation

Objective: To improve the technology, methodology, and instrumentation for collecting hydrologic data in the most timely and cost effective manner possible.

Base Program: Modern technologies have greatly increased the Geological Survey's capability to conduct hydrologic investigations. Computers, communications satellites, automated radios, various other electronic devices--some unique to the science of hydrology--are being developed to sense, sample, record, and communicate large quantities of water-resources information. This program is designed to apply these technologies to more fully automate and modernize the Geological Survey's hydrologic data collection activity.

The major activities of the current program are:

1. ENHANCEMENT AND APPLICATION OF REAL-TIME HYDROLOGIC DATA COLLECTION

The goal of this effort is to improve the reliability and timeliness of the data collection program and reduce the number of field visits necessary for operation of the hydrologic data-collection stations. The USGS is cooperating, largely on a reimbursable basis, with other Federal, State, and local agencies, in installing satellite telemetry equipment at USGS hydrologic stations, which use the Geostationary Operational Environmental Satellites (GOES). Satellite telemetry receive stations have been installed at six USGS District Offices. In FY 1985, the satellite telemetry receive stations were integrated with the USGS GEONET telecommunications network, allowing continuous distribution of data from Survey-operated GOES receive stations to any computer connected to the GEONET. This results in greatly increased responsiveness to user needs for hydrologic information. By the end of FY 1990, the network of real-time hydrologic stations is expected to reach approximately 3,400, which, through automation, are tied into the USGS National Water Information System. Ultimately a majority of the Survey's hydrologic stations will be capable of telemetering data via satellite. These capabilities are being utilized because of the need for real-time hydrologic data by cooperating agencies, such as flood forecasting by the National Weather Service and water management by the U.S. Army Corps of Engineers, and the increasing cost effectiveness of being able to monitor hydrologic stations remotely.

2. HYDROLOGIC INSTRUMENTATION RESEARCH AND DEVELOPMENT

The USGS, through its Hydrologic Instrumentation Facility at Stennis Space Center, Mississippi, and its facilities at the University of Minnesota's St. Anthony Falls Hydraulics Laboratory, is working to improve hydrologic instruments for use in data-collection activities. Activities include evaluating electronic environmental data recorders to replace the network of electromechanical devices now in use. The approach involves the procurement of commercially available hydrologic data recorders and sensors that meet Survey functional specifications. The Hydrologic Instrumentation Facility will continue work on developing and testing instrumentation to meet the increasing need for better methods of measuring ground-water levels and sampling for toxic substances in surface water and ground water. Efforts are being made to standardize and link new devices such as water-quality monitors and acoustic and pressure transducer sensors to the new electronic recorder and telemetry devices. Activities also include research and development for other measurement technologies and instruments for acid rain, water use, and other ongoing water-resources investigations programs. For example, pumps and samplers are being tested for toxic waste programs where there is a need for automated sampling capabilities to complement the manual sampling technologies.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adj Approp	FY 1991 Base	FY 1991 Estimate
Sensor Research and Development Projects	5	5	5	5
Real-Time (GOES Satellite) Hydrologic Data Collection Stations*	3,000	3,400	3,400	3,400
Satellite Telemetry Receive Stations	6	6	6	6

* Indicates number of USGS hydrologic stations equipped with GOES telemetry. Most of the stations have telemetry installed and operated on a repay basis by the USGS for a cooperating agency.

Water Resources Assessment

Objective: To provide Congress; Federal, State, and local officials; resource managers; and the general public with summary information about changes and trends in the availability, quality, and use of water resources in formats that facilitate the analysis and development of water policies, legislation, and management actions. Specific objectives are to: (1) describe the geographic extent and magnitude of water issues; (2) develop and maintain maps and national summary statistics that support the quantification of water issues and the description of water conditions; (3) improve methods to evaluate and characterize the effects of land and water uses on the distribution and availability of water resources; and (4) prepare National Water Summary reports, thematic maps, and other reports that portray the challenges and opportunities associated with managing water resources.

Base Program: The importance of periodic analyses of the Nation's water conditions and the identification of water issues have long been recognized as a point of departure in evaluating the effectiveness of water programs and formulating water policies. As a result, the Geological Survey established the Water Resources Assessment program in FY 1981 to assemble and synthesize existing information about water availability, quality, and use; trends in conditions; and the nature of water issues. Other USGS programs, such as the Data Collection and Analysis, Regional Aquifer-System Analysis, the pilot National Water-Quality Assessment, Toxic Substances Hydrology, and Federal-State Cooperative Programs, provide many of the data, analyses, and research results for synthesis and display in the annual National Water Summary reports.

The program has three elements: (1) identification and analysis of the Nation's water issues to provide insight into their nature, distribution, magnitude, and trends; (2) computer storage of summary statistics and map data describing water conditions; and (3) analyses of water resources conditions and presentation of the results in the National Water Summary, on maps, and in related technical reports.

Published and planned editions of the National Water Summary are described below:

- National Water Summary 1983 (published) "Hydrologic Events and Issues" identified a number of significant water issues to be discuss~~ed in~~ future National Water Summary reports, for example: salinity and sediment transport patterns in the Nation's river basins; nitrate distribution in ground water; quality of lakes and reservoirs; effects of mine drainage on water resources.

- National Water Summary 1984 (published) "Hydrologic Events--Selected Water-Quality Trends and Ground-Water Resources" included a State-by-State description of ground-water hydrology, reviewed significant hydrologic and water-related events that occurred during the year, and expanded on a number of specific water issues that were discussed in the 1983 Summary: analysis of occurrence of nitrate in ground water; ground-water declines in selected areas of the country; distribution and trends of several water-quality constituents in major rivers.

- National Water Summary 1985 (published) "Hydrologic Events and Surface-Water Resources" focused on State-by-State descriptions of surface-water resources and defined the availability, use, and management of these resources.

- National Water Summary 1986 (published) "Selected Hydrologic Events and Ground-Water Quality" includes State-by-State descriptions of ground-water quality and descriptions of the factors affecting ground-water quality, case studies of ground-water contamination, and a review of some management approaches used by the States to protect ground-water quality.

- National Water Summary 1987 (in preparation, and planned for release in early Calendar Year 1990) "Hydrologic Events and Water Supply and Use" includes State-by-State descriptions of ground- and surface-water availability and comparison to current water use.

- National Water Summary 1988-1989 (in preparation, and planned for release in the latter part of Calendar Year 1990) "Hydrologic Events and Floods and Droughts" will include State-by-State descriptions of major floods and droughts, and their impacts on the States' economy and population. In FY 1989, the determination was made to change the publication schedule for the National Water Summary series from annual to biannual in recognition of the expense and complexity associated with attempting to maintain an annual publication schedule. The 1988-1989 National Water Summary, addressing "Floods and Droughts," will be the first report produced under this amended schedule.

- The National Water Summary for 1990-1991 (in preparation, and planned for release in Calendar Year 1992) will address the topic of stream water quality and will display information on the status and trends of selected water-quality constituents.

- The National Water Summary for 1992-1993 (in preparation, and planned for release in Calendar Year 1994) will address the topic of wetlands.

FY 1990 - FY 1991 activities include:

(1) Publication of the National Water Summaries on the subjects of "Water Supply and Use" and "Floods and Droughts;" and continued work on Water Summaries on the subjects of "Stream Water Quality" and "Wetlands."

(2) Updating information on interbasin transfers of water.

(3) Preparation of a data base containing the location and characteristics of major public water-supply wells in the United States.

(4) Development of a water-quality data base and trends analysis software that will be used in preparing the National Water Summary 1990-1991 on the subject of Stream Water Quality.

(5) Compilation of a data base on flood and drought statistics accumulated for the 1988-1989 National Water Summary.

(6) Publication of a report on the water-quality conditions in selected lakes and reservoirs in the United States.

(7) Publication of a report on river sediment loading in major drainage areas in the United States.

(8) Selecting the topic and developing the plan for the 1994-1995 National Water Summary.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adj Approp	FY 1991 Base	FY 1991 Estimate
National Water Summary Reports in Various Stages of Preparation	4	4	4	4
Data Compilation, Analysis, and Research Projects	4	4	4	4

Average unit costs for selected program outputs for FY 1991 Estimate:

Number of National Water Summary Reports in Various Stages of Preparation	4 @	$350,000
Data Compilation, Analysis, and Research Projects	4 @	$50,000

Toxic Substances Hydrology--Surface-Water and Ground-Water Contamination

Objective: The Toxic Substances Hydrology Program is designed to provide the Nation with earth-sciences information needed to improve waste-disposal practices and to help mitigate existing and future ground-water and surface-water point and nonpoint contamination problems by: (1) refining and developing new methods to sample and measure hazardous substances in ground water and surface water, aquifer and sediment materials, and biota; and (2) acquiring a greater understanding of the biological, physical, geological, and chemical processes and factors that affect the movement and fate of hazardous substances in ground-water and surface-water systems originating from such point sources as pits, ponds, lagoons, or landfills, or such nonpoint sources as agricultural or suburban areas. This information is necessary to help appraise the occurrence, movement, and fate of hazardous substances in the Nation's ground water and surface water and sediments, and to provide techniques and procedures to help determine how these are changing with time.

Contamination of the Nation's ground water and surface water by toxic wastes is considered by many to be one of the most significant environmental issues of the decade. Billions of gallons of contaminated liquids are discharged into the environment each year and virtually all States have ground-water and surface-water problems resulting from toxic organic chemicals or heavy metals from point or nonpoint sources. Awareness of the seriousness of ground-water and surface-water and sediment contamination by hazardous substances has increased dramatically in recent years. Incidents such as trichloroethylene contamination in New Jersey; contamination of municipal wells in Woburn, Massachusetts, by chlorinated organics; and PCBs in the Hudson River sediment and water have received widespread attention by Federal, State, and local agencies and the general public. Successful implementation of the laws and regulations to reduce environmental degradation from toxic waste contamination requires credible earth-sciences information. The Toxic Substances Hydrology Program is playing an important role in identifying the nature of these problems and in providing information needed for their resolution.

Base Program: The Geological Survey Toxic Substances Hydrology Program focuses on the development of new knowledge and insight regarding the occurrence, movement, and fate of toxic contamination in both ground water and surface water. The program is structured to enable: (a) the pursuit of a broad range of fundamental process-oriented research and methods development efforts related to contamination in both surface and subsurface hydrologic systems; (b) the conduct of intensive, interdisciplinary field research of specific ground water and surface water contaminated by selected types of chemicals; and (c) the improvement of methods for the collection, analysis, and interpretation of hydrochemical information at regional scales to test and develop methods needed to determine the extent and magnitude of contamination from non-point sources. The three major components of the program are: Process-Oriented Research and Methods Development; Focused Field Investigations and Research; and Regional Investigations. This program is closely coordinated with the U.S. Environmental Protection Agency and the U.S. Department of Agriculture.

PROCESS-ORIENTED RESEARCH AND METHODS DEVELOPMENT

The USGS is developing relevant fundamental principles, general understanding, and scientifically-based methodologies to describe the occurrence, movement, and fate of contaminants in ground-water and surface-water systems.

This program component, which is carried out in close collaboration with the Core Research Program, includes research in the following topical areas:

a. Ground-water hydrology--Provides a quantitative understanding of the flow of water and the transport of its constituents through the subsurface. New mathematical methods are being developed to better explain the mechanisms by which contaminants mix with ground water or are transported through rock fractures, and how gaseous or non-water phase fluids move through the ground.

b. Erosion and sediment transport--A large part of toxic substances in rivers are attached to and transported by sediment. Conceptual and mathematical models are being adapted or developed to describe the cycle of detachment, movement, and deposition of sediments in river basins.

c. Inorganic and organic geochemistry--The movement of inorganic and organic contaminants may be affected by a variety of reversible or irreversible chemical reactions such as ion exchange, mineral solution or precipitation, ion filtration, absorption/desorption, oxidation/reduction, complexation, and degassing. Research is being conducted to characterize the trace inorganic and organic chemicals in ground water and surface water; and the pathways, rates, and controlling factors of reactions of important trace contaminants in solution and at the solid/water surface.

d. Ecology--Provides an understanding of how living organisms accumulate and alter inorganic and organic trace substances. One need is definition of the quantitative relations between the concentrations of toxic substances in water and sediment and the concentrations in aquatic biota.

e. Methods development--Major research and development is required to improve methods for sample collection, sample preparation, and analysis for toxic substances. Efforts are being directed toward developing better techniques to obtain representative samples of ground water contaminated by organic chemicals; improving methods for extracting both metals and organic chemicals from solids; and improving the ability to detect and quantify substances present at extremely low concentrations.

In FY 1990 and FY 1991, at the Base program level, research will continue as described above. Specific goals will include:

- Calibration of transport models previously developed to simulate the movement of gases in the unsaturated zone and certain chemical constituents in the saturated zone.
- Laboratory and field investigations of the interactions between hazardous organic substances and naturally occurring organic material.
- Investigation of biological response to and transformation of hazardous substances.
- Development of methods for analyses of trace concentrations of hazardous substances in solution and those associated with solid surfaces.
- Study of the scale dependence of chemical and microbiological processes affecting contaminants.

FOCUSED FIELD INVESTIGATIONS AND RESEARCH

Field investigations combine applied and basic research at sites where the process-oriented and methods development work described above can be used to study the fate and transport of important types of organic and inorganic contaminants in ground-water and surface-water systems. These intensive studies allow for the development of new study approaches and an improved understanding of how certain classes of contaminants react in representative hydrologic environments, which can then be applied to more directed studies conducted in the Federal-State Cooperative Program or in other Federally-funded programs, such as the National Water-Quality Assessment projects, or by State and Federal agencies.

Although the ongoing intensive studies address many important types of ground-water and surface-water contamination, many classes of contaminants and environmental settings in which contamination is occurring remain unstudied. As research objectives are accomplished at the ongoing study sites, and/or as funds become available, additional sites will be selected. Some resources will be devoted to identifying and evaluating candidate sites for future research regarding contaminants and settings not currently under study, such as:

- Organic and inorganic contaminants in lakes, reservoirs, and estuarine environments

- o Ground water and surface water contaminated by mixtures of hazardous chemicals and radioactive wastes
- o Ground-water and surface-water systems contaminated by a complex mixture of organic and inorganic chemicals
- o Gasoline contamination of ground water
- o Surface water impacted by industrial organic waste from sources such as pulp mills or the tanning industry

a. Ground water--The ground-water intensive interdisciplinary field investigations are designed to: (1) demonstrate the application of theoretical and analytical methods in real-world situations; (2) improve field and laboratory methodology, sampling, and exploration procedures utilizing innovative geochemical and geophysical techniques; (3) use scientific findings to develop innovative techniques to neutralize, immobilize, or remove contaminated ground water; (4) assess the overall reliability and value of predictive models for ground-water pollution; and (5) evaluate operational and continuing data collection strategies for ground-water quality restoration programs.

In FY 1990 and FY 1991, ground-water contamination studies will continue at the following sites:

1. Bemidji, Minnesota (started in FY 1983): Crude oil has contaminated a shallow aquifer. Under study are the processes affecting how crude oil and its derivatives are being transported through the subsurface. The crude oil is currently found to be floating on the water table, coating aquifer material, dissolved in ground water, and vaporizing into the unsaturated zone. Studies will continue on the movement of gases originating in crude oil and migrating through the unsaturated zone, and on defining movement of oil as a separate phase that is floating on the surface of the water.

2. Cape Cod, Massachusetts (started in FY 1983): Sewage and chlorinated hydrocarbons are contaminating a shallow, sandy aquifer. The process by which the sewage mixes with ground water is of major theoretical and practical concern; understanding this process will help in developing more accurate ground-water transport models. Efforts will continue to focus on interpretation of a three-dimensional tracer study to better understand the effects of dispersion and geochemical reactions on the transport of reactive and nonreactive, organic and inorganic chemicals in the subsurface.

3. Pensacola, Florida (started in FY 1983): Creosote and pentachlorophenol have impacted a shallow ground-water system as well as a stream and bay. In FY 1990, field activities at the Pensacola site will end. Numerous technical reports have already been published; however, some resources will continue to be used in FY 1991 for preparation of reports documenting research conducted at the site.

4. Picatinny Arsenal, Morris County, New Jersey (started in FY 1985): Trichloroethylene (TCE) is a major ground-water contaminant throughout the Nation. It can be found dissolved, or as a separate liquid phase, in ground water and as a gas in the unsaturated zone. The processes

affecting transport in water and in the gaseous phase are being studied to predict the fate of TCE and recommend clean-up procedures.

5. Miami Wash - Pinal Creek, Arizona (started in FY 1985): An acidic plume of contaminated ground water is moving through a shallow alluvial aquifer downstream from a copper mining area. The plume has pH values of 2 to 3 and contains high concentrations of dissolved metals which may precipitate from solution. The project is studying the types and rates of chemical reactions that alter the chemistry of the plume, and is developing numerical methods to simulate the flow of ground water and its interaction with surface waters and the transport of metals through the ground-water system. Recent findings indicate that manganese is reaching the perennial stream downgradient from the contaminated ground water area. The contaminated water eventually enters a source of public water supply. This site provides new opportunities to study the movement of metals in a surface-water system and the potential impact on the quality of the stream. EPA is currently using the site to field check the accuracy of chemical-equilibrium models to predict whether or not inorganic metals will be mobilized or immobilized under a variety of geochemical conditions. Such models will help in evaluating options for site remediation.

6. Ground-Water Contamination in a Fractured Rock Setting (starting in FY 1990): Workplans for fractured-rock sites in New Hampshire, New York, the Virgin Islands, and Wyoming are in preparation. Research will begin during FY 1990 at the Mirror Lake, New Hampshire, site to continue the development and testing of methodologies for field characterization of fluid movement and chemical transport. The other sites require additional characterization to determine their suitability for long-term research into contaminant transport in fractured rock.

b. Surface water--A series of detailed field investigations are being conducted in selected river basins. The purpose of these investigations is to: (1) determine the occurrence, distribution, and movement of organic substances and trace metals in river systems under different settings; (2) improve knowledge of the processes and factors which govern the movement and fate of different classes of toxic substances in different hydrologic settings; and (3) develop improved study approaches and sampling methods for evaluating the magnitude, distribution, and movement of toxic substances in water, sediment, and biota.

The following intensive river basin investigations are underway:

1. Calcasieu River in Louisiana (started in FY 1985): The problem in the Calcasieu River is contamination by organic chemicals. Land use along the lower river is primarily urban and industrial; petrochemical plants use the river for water supply and effluent discharge. This study focuses on understanding the distribution of organic compounds among water, sediment, and biota.

2. Whitewood Creek and Belle Fourche River System in South Dakota (started in FY 1985): The water-quality problem being investigated in this system is associated with many years of gold mining in the Black

Hills and the discharge of mine wastes from these operations into Whitewood Creek. Field activities at this site will be concluded during FY 1990, and the focus of activities will shift to completing reports documenting the research conducted on the Whitewood Creek and Belle Fourche River System.

3. Upper Arkansas River Basin in Colorado (started in FY 1986): Investigations focus on effects of mine drainage. Water flowing through abandoned tailings and from mine drains in the Leadville, Colorado, area contributes large amounts of cadmium, copper, iron, lead, manganese, nickel, and zinc to the Arkansas River. This study focuses on describing the distribution and movement of metals in the upper Arkansas River and understanding the chemical and biological processes that affect the form of selected metals.

4. New river basin investigation: The process of selecting a new river basin for intensive investigation will begin during FY 1990. The new site will allow for expansion of research activities into new hydrogeologic environments and/or new types of contaminants. During FY 1990, a workplan will be prepared and some reconnaissance level field activities will be initiated. Research settings and contaminant types under consideration include: organic and inorganic contaminants in lakes, reservoirs, and estuaries; systems impacted by complex mixtures of organic and inorganic chemicals; and systems contaminated by industrial organic waste.

c. Regional studies--Studies of the effects of human activities on regional patterns of water quality are complicated because sources of manmade chemicals commonly vary geographically and over time, and because the complex nature of hydrologic systems can cause the chemicals to follow uncertain paths once introduced into the environment.

The results from studies completed in FY 1990 will be significant in developing predictive tools about human effects on regional patterns of ground-water quality. The next step in conducting regional investigations is to apply the research and methods developed thus far to studies of multi-State regions, to deeper parts of aquifers, to additional types of manmade chemicals, and to surface water. To this end, detailed workplans are being prepared and implemented in FY 1990 for two multi-State, regional studies, one in the Nation's midcontinent and the other in the mid-Atlantic coastal plain.

The midcontinent study concentrates on the effect of agriculture on the quality of ground water and surface water. To understand the extent to which water quality has been, or potentially could be affected by agriculture, resource managers need to understand the conditions under which pesticides and fertilizers move through hydrologic systems. Such scientific information could provide the basis to develop management guidelines for protecting the Nation's water from agricultural chemical contamination.

The mid-Atlantic coastal plain study concentrates on the effect of urban, suburban, and industrial land use on the occurrence of volatile organic compounds, selected pesticides, metals, and nutrients in ground water and surface water. A major question to be addressed is: what are the relations between the intensities of land use and associated chemical infiltration to ground-water and surface-water quality? The answer to this question is central to the needs for regulations designed to protect drinking-water sources.

The overall objective of the studies is to better understand the processes and factors that affect the patterns of occurrence of manmade chemicals in regional ground water and surface water. The initiative includes ground water, surface water, and interactive ground-water and surface-water systems as these play an important role in the fate of manmade chemicals in the environment. Within base funding, the studies will include literature reviews to identify the controlling processes and factors that affect fate and transport of selected manmade chemicals, evaluate the size of areas or scales within which the factors are important, and relate appropriate factors to the occurrence of selected manmade chemicals. Computer databases will be created so that regions having similar hydrogeologic, climatic, and land-use characteristics can be delineated for study. Reconnaissance level investigations will select areas for additional, more intensive studies.

The studies are interagency in scope. The midcontinent study represents a significant research and development component of the President's interagency water quality initiative and thus is being coordinated with the U.S. Department of Agriculture, the Environmental Protection Agency (EPA), and the National Oceanic and Atmospheric Administration. The mid-Atlantic study is being coordinated with EPA.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adj Approp	FY 1991 Base	FY 1991 Estimate
Process-Oriented Research and Methods Development				
Projects/Studies Underway	49	49	49	49
Focused Field Research				
Ground-Water Contamination Site Investigations	5	6	6	6
Surface-Water/Sediment Contamination River Basin Investigations	3	3	3	3
Regional Studies	2	2	2	2

Average unit costs for selected program outputs for FY 1991 Estimate:

Process-Oriented Research and Methods Development Projects/Studies	**49 @**	**$170,000**
Focused Field Research		
Ground-water Contamination Investigations	6 @	$500,000
Surface-Water/Sediment River Basin Investigations	3 @	$250,000
Regional Studies and Associated Research and Methods Development Projects	2 @	$1,300,000

Some recent research findings of the Toxic Substances Hydrology Program are as follows:

- A reconnaissance of surface waters in 10 midwestern States determined that detectable levels of triazine herbicides were present in 55 percent of the 150 stream sites. The streams were sampled in early spring 1989 before new application of herbicides to fields. Follow-up sampling in May and June, after herbicides had been freshly applied to the fields to control weeds, yielded detectable levels at about 90 percent of the sites.

- Regional water-quality studies were completed in New York, Connecticut, New Jersey, Kansas/Nebraska, and Florida. The results of the studies indicate that correlations exist between certain human activities and the occurrence of selected manmade chemicals.

- The occurrence of atrazine, a triazine herbicide, could be related to several hydrologic (well depth, specific discharge), climatic (annual precipitation), and human (irrigation-well density, pumpage) factors in studies conducted in Kansas and Nebraska.

- USGS has predicted that metal-laden acidic ground water will seep into Pinal Creek, Arizona, within 5 to 15 years. In response to this information, the U.S. Environmental Protection Agency (EPA) has increased their monitoring activities in an effort to track the movement of the metal contaminants and to develop plans to mitigate the problem.

- USGS and EPA are studying the movement of metals in acidic ground water to validate EPA geochemical models at the USGS field research site in Pinal Creek, Arizona. The models are needed by EPA to support Resource Conservation and Recovery Act regulations.

- For the first time, a model was verified that predicts the occurrence of volatile organic compounds (VOCs) in ground water. This model is an important step in developing a regional predictive capability to help determine how human activity may affect the quality of shallow ground water. The logistical regression model uses explanatory variables such as population density and percent of industrial land to characterize the probability of detecting VOCs in ground water underlying five land-use areas on Long Island, New York.

- Understanding in situ microbiological degradation is necessary to predict the ultimate fate of many organics in ground water. USGS research has produced the following findings to date:

  -- Phenolic compounds, organic acids, and nitrogen containing compounds present in creosote and pentachlorophenol at the Pensacola, Florida, site were found to be degraded by anaerobic bacteria; such reactions tend to retard their movement relative to that of ground water.

  -- Volatile hydrocarbons associated with crude-oil contaminated ground water at the Bemidji, Minnesota, site are being converted to carbon dioxide or methane by microbes. These reactions are occurring within very short distances (i.e., tens of feet) from the point at which the crude-oil reaches and begins to float on the water table.

- Analysis of a large-scale, natural-gradient tracer test at the Cape Cod, Massachusetts site has been completed, and several journal articles are in preparation for publication. This test has received national and international recognition in the study of the dispersion of solutes in ground water. This information is essential to develop better predictive models of contaminant transport.

- The mobility of bacteria in ground water has been well documented through several tracer tests conducted at the Cape Cod, Massachusetts site. Bacteria was found to move at least as fast as nonreactive tracers.

- Evaluation of the extensive water-quality data base for the Cape Cod, Massachusetts site demonstrates that many trace organic contaminants have persisted for over 30 years in the ground water.

- A sensor was designed to determine whether granular porous media is saturated with organic fluids, soil gas, or water. The sensor is being field tested at the Bemidji, Minnesota research site and should prove useful in determining the fate of crude oil and its derivatives in contaminated ground water.

- Iron chemistry in a tributary to the Arkansas River is affected by photochemical reactions. Daily fluctuations in iron species have been overlooked in previous studies of acidic streams and lakes. This may account for the wide variations in concentrations of iron, copper, and other metals reported for such streams and lakes.

- Daily fluctuations in pH caused by photosynthetic reactions play an important role in determining the concentrations of dissolved arsenic in Whitewood Creek.

- Approximately one-third of the mine tailings discharged into the Whitewood Creek - Belle Fourche River - Cheyenne River system are presently stored along the floodplain, downstream of the discharge point. Measurements of meander-migration rates of channels in contaminated floodplain areas indicate that the metal contaminated floodplain deposits will be a source of metals for centuries. Studies of arsenic contaminated sediments that have been deposited in a reservoir, downstream of the highly contaminated area, indicate that the arsenic appears to be immobilized in the reservoir by natural processes. This is important in understanding the ultimate fate of contaminated sediment.

- Results from studies at the Calcasieu River indicate that organic contaminants are removed from the water column by the interaction of salt and natural organic compounds, causing the bottom sediments in the estuary to serve as a major sink for the contaminants.

- Analytical methodology has been developed which will allow for the quantification of trace elements using a very small amount of material. This is important for studies of the transport of trace metals by suspended sediment.

- Ground water contaminant plumes have been found to consist of distinct "reaction zones." These zones commonly have very limited vertical and horizontal extent but may significantly alter the contaminant composition.

- Field testing of a variety of sampling methods has demonstrated that the concentration of organic contaminants in the sampled water may vary widely as a result of pumpage rate or duration. It is important to overcome such sampling problems to properly interpret ground-water quality data.

- Field comparisons have been completed of a variety of downhole and surface sampling devices for volatile organic compounds in ground water in New Jersey. Such devices will insure that volatile gases in samples will not be lost during collection, and, therefore, the samples will more accurately represent in situ conditions in ground water.

- The regional effects of injection of liquid waste into the subsurface was digitally modeled as part of a research project in Florida. Such models provide information about time of travel of the injected waste through the subsurface.

Nuclear Waste Hydrology

Objective: To support the national effort to select and characterize sites where high-level radioactive wastes can be effectively isolated in deep geologic environments, and to determine the hydrologic and geologic conditions important for the shallow burial and containment of low-level radioactive wastes. Specific objectives of the high-level radioactive waste program are to provide techniques and methodology for: (a) evaluating the chemical interaction of nuclear waste with natural fluids and with the rock and mineral framework of the ground-water systems; (b) evaluating transport of waste nuclides by ground water; and (c) evaluating and reviewing geologic and hydrologic conditions at a site selected by the Department of Energy. (Nuclear Regulatory Commission evaluation will be made to see if a proposed site for a high-level waste repository conforms to criteria adopted for licensing the facility.) The objective of activities with regard to low-level nuclear waste is to develop hydrogeologic information for use in selecting future sites for burial of these wastes and in monitoring and managing existing disposal sites. These USGS efforts support the Low-Level Radioactive Waste Policy Act of October 1980 and the Low-Level Radioactive Waste Policy Amendments Act of 1985.

Base Program:

Low-Level Nuclear Waste Investigations - Research and investigations are being conducted to develop a better understanding of the earth-science factors related to the effective disposal of low-level radioactive waste. Three of six commercial, low-level radioactive waste disposal sites (Maxey Flats, Kentucky; West Valley, New York; and Sheffield, Illinois) have been closed in recent years because of questions raised regarding their hydrogeologic characteristics as well as other concerns. The Environmental Protection Agency, Nuclear Regulatory Commission, and Department of Energy, as well as State agencies are actively developing technical criteria, standards, regulations, and plans for low-level waste management. Those agencies rely on the USGS for appropriate hydrogeologic information and advice upon which to base their rules, site selection criteria, etc. Therefore, all major elements of this program are closely related and coordinated with those agencies. The Low-Level Radioactive Waste Policy Act requires the Department of Energy to develop a national waste management program aimed at assisting States to select and develop additional and better low-level waste sites. Reports and input from the current USGS program have provided much to the technical basis for Nuclear Regulatory Commission rules, for Department of Energy site selection guidelines, and for forthcoming Environmental Protection Agency standards. Information from the current USGS program also is being used by States and Compacts in the siting and development of new low-level radioactive waste disposal sites.

The field program in FY 1990 and FY 1991 will focus on field investigations at a commercial disposal site at Beatty, Nevada. Earlier pioneering studies in New York, Illinois, and Kentucky involved new and innovative technology to assess processes and parameters controlling nuclide migration in ground water. Initial investigations identified several technical areas needing more intensive study to acquire the necessary quantitative understanding of hydrogeologic principles related to radioactive waste disposal. The field investigations are supported by research into hydrologic, chemical, and physical mechanisms which control subsurface leaching and migration of radionuclides, including transport in the gaseous phase; better methods of modeling these mechanisms; and the development of techniques for sampling and measuring geohydrologic, physical, and chemical parameters in the field. The USGS has been developing geohydrologic criteria for disposal-site selection and guidelines for site characterization based on the results of field and laboratory studies. Many of the results from this research will have important and broad applications to another critical national problem--the disposal of other types of hazardous wastes.

During the period FY 1983 to FY 1986, reports were released by the USGS concerning investigations at all the commercial sites. The focus of the program now is to achieve a better understanding of specific hydrogeologic problems related to radioactive waste disposal. This objective is being accomplished by concentrating resources at the Beatty, Nevada, site. Research also is being conducted on hydrologic, chemical, and physical mechanisms. Principal processes currently under study include: radionuclide movement in the unsaturated zone; transport of nuclides in the gaseous phase; and ground-water flow and radionuclide transport in fractured media. A study of gas transport at the West Valley, New York, site will begin in FY 1990.

In response to increased efforts to improve waste management practices and remediate sites at DOE defense installations, the USGS has increased emphasis on the study of chemical reactions in shallow subsurface environments typical of those encountered at these facilities. This research includes work on the role of microorganisms in destroying toxic hydrocarbons and promoting increased sorption of radionuclides, both naturally and as possible remediation measures.

High-Level Nuclear Waste Investigations - The Geological Survey's High-Level Nuclear Waste Investigations program, which began in FY 1979, has completed pilot feasibility studies for identification of environments with effective multiple barriers to radionuclide transport and for characterization of media comprising specific environments in the Basin and Range Province in the western United States. The High-Level Nuclear Waste Investigations program has independently supported the development of techniques and methods for characterizing environments and the investigation and modeling of processes related to radionuclide migration, ultimately to develop predictive radionuclide transport models for site evaluation. A cooperative planning effort with the Department of Energy resulted in a jointly authored report on an earth science technical plan for disposal of radioactive waste in a mined repository. It describes a research program to resolve earth science problems associated with developing such a repository. Regularly scheduled meetings with the Department of Energy and ad-hoc meetings with other Federal agencies assure continued coordination of plans and compatibility of activities.

In FY 1989 and FY 1990, funds were appropriated to the USGS to support the continued conduct of a small independent research program on high-level nuclear waste issues. This independent research program includes investigations in the following topical areas: (1) ground-water flow in fractured rock; (2) ground-water flow in the unsaturated zone; (3) geochemistry as a tool for defining ground-water flow systems; and (4) paleoclimate. **In FY 1990 and FY 1991, the USGS also will continue to perform a review, consultation, and coordination function associated with the earth-science aspects of high-level radioactive waste disposal, in support of the national program mandated by the Nuclear Waste Policy Act of 1982 and the Nuclear Waste Policy Amendments Act of 1987, and a few research projects will be supported. The USGS has participated in the technical review of the Department of Energy Site Characterization Plan for the Yucca Mountain site selected for characterization for the first geologic repository for the disposal of high-level radioactive wastes. Most remaining USGS involvement with regard to high-level radioactive waste issues would be performed for other Federal agencies, such as the present reimbursable program with the Department of Energy.**

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adj Approp	FY 1991 Base	FY 1991 Estimate
Research and Investigative Projects Underway	30	29	30	26

Average unit costs for selected program outputs for FY 1991 Estimate:

Research and Investigative Projects Underway 26 @ $130,000

Decrease for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	3,860	3,430	-430
FTE	59	53	-6

The decrease proposed for FY 1991 reflects a reduction in both fundamental and applied research in the low and high-level radioactive waste segments of the program. Research to understand chemical and microbial reactions in shallow subsurface environments will be scaled back; work on paleoclimate and regional geology in the southern Great Basin in the vicinity of the Yucca Mountain site will be curtailed.

Distribution of change by object class:

The object class detail for the proposed $430,000 decrease is as follows:

	FTE	Amount
Personnel Compensation ----------------	6	$163,938
Personnel Benefits --------------------		36,886
Travel and Transportation of Persons ---		21,500
Transportation of Things --------------		8,600
Communications, Utilities, and Misc. Charges ------------------------		30,900
Printing and Reproduction -------------		4,300
Other Services ------------------------		109,576
Supplies and Materials ----------------		4,300
Equipment -----------------------------		50,000
Total -----------------------	6	$430,000

Acid Rain

Objective: (1) To help measure the amount, chemical composition, and variability of atmospheric deposition nationwide; (2) to measure water quality in a number of susceptible lakes and streams to ascertain long-term changes resulting from acid deposition; (3) to provide quality-assurance support for chemical analyses performed for the National Trends Network and other Federal and State deposition monitoring networks; (4) to determine the effects of acid deposition on water resources, soils, and near-surface rocks, in a variety of acid-sensitive areas; (5) to help predict, based upon the information gained, what effect either increased or decreased pollutants in rainfall will have on the characteristics of soils, rocks, and natural waters; and (6) to determine the mechanisms and rates of deterioration of common building stones by atmospheric deposition.

Base Program: The Geological Survey's Acid Rain Program began in FY 1982 and is being carried out as part of the National Acid Precipitation Assessment Program (NAPAP) of the Interagency Task Force on Acid Precipitation through FY 1990, when the interagency program comes to its statutory end. Under NAPAP, the USGS is presently the lead agency for those elements of the interagency program addressing Atmospheric Deposition and Air Quality Monitoring and Effects on Materials and Cultural Resources, two of seven task groups formed by the

Interagency Task Force to coordinate and implement research on acid precipitation. The USGS expects the continuation of some of the seven interagency task groups in a less formal arrangement after 1990, and plans to use those bodies for coordination of its continuing efforts in acid rain research. In particular, the interagency group that is composed of representatives of agencies involved in operation of the National Trends Network has concurred that the activities should continue under the leadership of the USGS, and will be utilized for coordination of that monitoring effort.

The three principal components of the USGS program are as follows:

1. MONITORING ATMOSPHERIC DEPOSITION

A major element of the Geological Survey's continuing responsibility, as lead agency for the Task Group on Atmospheric Deposition and Air Quality Monitoring, has been coordination of the design, implementation, and operation of the interagency National Trends Network (NTN), a 150-station network for collecting data on atmospheric deposition in the United States. The NTN is operated in cooperation with other Federal, State, and local agencies, universities, and private industry. The 150-station network is designed to be a rural network reflecting regional characteristics of precipitation chemistry without the localized effects of nearby sources of air pollution. Designation of data collection sites has taken into account regional variations in ecology, existing knowledge of atmospheric deposition patterns of acidifying substances, definition of areas believed to be sensitive to acidification, and the existence of data collection sites in other programs.

USGS activities include:

- In FY 1990, the USGS is budgeted for the operation of about one-third of the 150-station NTN. For the past year, the USGS and the other agencies participating in the network have been exploring alternatives to insure the continued long-term operation of the entire NTN upon completion of the interagency program.
- Conducting a field and laboratory quality-assurance program for the USGS and other Federal and non-Federal agencies involved in monitoring acid deposition; conducting an intercomparison study of principal United States and Canadian precipitation monitoring network operations to determine comparability of precipitation chemistry monitoring results in the two countries.

2. MONITORING SENSITIVE LAKES AND STREAMS

This is part of a larger Federal interagency effort to determine the effects of acid deposition on sensitive lakes and streams throughout the United States.

FY 1991 efforts will include continuing long-term data collection and analysis in 13 selected sensitive areas to provide a basis for evaluating the effects of acid deposition on lakes, streams, and ground water. These study areas have been identified as sensitive to acid deposition and each is representative of a particular combination of geologic, hydrologic, and meteorological conditions.

3. RESEARCH ACTIVITIES

The USGS acid rain research program is designed to acquire an understanding of the processes by which atmospheric deposition impacts hydrologic systems and building materials. Ongoing research activities in FY 1990, which are planned to continue in FY 1991, are as follows:

- Detailed investigations in 7 of the 13 monitored sensitive areas are being conducted in an effort to define the chemical interactions between atmospheric deposition, bedrock, soils, and surface and ground water. The seven areas were chosen to represent a variety of sensitive watersheds throughout the Nation, but with the largest number of sites in the East where the acidity of atmospheric deposition is highest.

- Continuation of a research program to assess the effects of acid deposition on building materials, which includes:

  -- conducting laboratory chamber studies of limestone and marble samples in controlled atmospheres to determine the environmental factors that influence the delivery of gaseous pollutants to carbonate stone surfaces

  -- exposing selected samples of limestone and marble to atmospheric weathering at several locations in the eastern United States to determine rates and mechanisms of deterioration

Recent Accomplishments

- Continued to coordinate and participate in the operation of the National Trends Network, a 150-station, nationwide multi-agency network for monitoring precipitation chemistry in the United States.

- Contributed to the planning, writing, reviewing, and editing of the set of 29 publications that constitute the final report of the Federal interagency National Acid Precipitation Assessment Program, which ends on September 30, 1990.

- Produced a videotape entitled "Every Tuesday Morning," which is intended to serve as a training aid to supplement the "hands-on" formal training program of the National Trends Network.

- Published a report, "Interrelationships among Hydrologic-Budget Components of a Northern Wisconsin Seepage Lake and Implications for Acid-Deposition Modeling." A study of the hydrologic budget for a northern Wisconsin seepage lake showed a direct relationship between storage change and precipitation-evaporation balance. However, neither ground-water outflow nor inflow was related to precipitation, evaporation, storage change, or lake stage. These results may reflect a lag in response time of the ground-water system compared to the lake, and emphasize the complexity of factors that influence ground water interactions with seepage lakes.

- Published a report, "A Field Study of Pollutant Effects on Carbonate Stone Dissolution." Freshly quarried slabs of limestone and marble were exposed at several field sites to ambient air and rain ranging from low to high in acidity and in concentrations of sulfur and nitrogen oxides. The natural solubility of calcium carbonate in pristine rain appears to account for up to 75 or 80 percent of the limestone and marble dissolution. Together, hydrogen ion and sulfur can explain 20 to 25 percent of the additional marble dissolution, probably largely through conversion of the stone to even more highly soluble gypsum.

- Published a report, "Stability of Nitrate-Ion Concentrations in Simulated Deposition Samples Used for Quality-Assurance Activities by the U.S. Geological Survey." Both nitric acid solutions and sodium nitrate/sulfuric acid solutions showed small, acceptable losses of nitrate during the first 8 days, after which they were stable. Solutions containing major cation and anion concentrations, which more nearly resembled natural atmospheric deposition, were generally unstable with respect to nitrate-ion concentrations, possibly due to the introduction of biological contaminants with added chemicals.

- Published a report, "The Chemical Composition of Precipitation, Dew and Frost, and Fog in Denver, Colorado." A relationship among calcium, magnesium, sodium, chloride, and fluoride was observed in urban precipitation in Denver, and is probably due to scavenging of soil-derived particulate matter by the precipitation. The chemical composition of dew and frost samples is affected substantially by the dissolution of particulates on the collection surface. Fog samples were substantially more acidic than either precipitation or dew and frost.

- Published a report, "The Applicability of Principal Components Analysis for Determining Sources of Wet Deposition." An analysis of wet deposition data from 194 sites in the United States showed that about 90 percent of the components derived were interpretable as "acid" (acid rain), salt (sea salt/road salts), or agriculture/soil association. The use of multi-solute components for determining trends or spatial distribution showed a significant improvement over single-solute analysis in indicating relationships to sources of atmospheric deposition, and revealed a far more important role of acid deposition in the southeastern and intermountain regions of the United States than would be indicated by maps of sulfate or nitrate deposition alone.

- Published a report, "Atmospheric Deposition of Sulfur to a Granite Outcrop in the Piedmont of Georgia, U.S.A." A sampling of runoff from 70 percent of the precipitation for the period showed that the sulfate from precipitation accounted for 67 percent of the total sulfate in runoff. Sulfate and hydrogen ion concentrations due to wash-off of dry deposition varied greatly among rainfall events, depending on the length of the dry period between rains, and were generally highest at the onset of the event.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adj Approp	FY 1991 Base	FY 1991 Estimate
National Trends Network stations supported by the USGS	55	57	57	57
Research and investigative projects	6	6	6	6

Average unit costs for selected program outputs for FY 1991 Estimate:

57 NTN stations (includes costs associated with field operations, laboratory analysis and quality assurance, data management, and data interpretation)	57 @	$23,000
6 research/investigative projects	6 @	$300,000

Scientific and Technical Publications

Objective: To make available, through various types of scientific publications, the results of water resources research and investigations.

Base Program: The issuance of scientific and technical publications is central to the accomplishment of the Geological Survey mission and provides the most important vehicle by which the results of research and investigations are made available for use by other governmental agencies, the private sector, and the general public. The results of water resources research and investigations are published in a wide variety of technical book and map reports, for example: water-resources investigations; circulars; water-supply papers; professional papers; journal articles; data reports; open-file reports; cooperator series; and miscellaneous maps and reports. Funding for (a) publications planning, (b) technical review and approval, (c) scientific editing, and (d) typesetting, design, and layout of technical and scientific reports is provided through this line item.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adj Approp	FY 1991 Base	FY 1991 Estimate
Total publications processed	1,680	1,650	1,650	1,650

Average unit costs for selected program outputs for FY 1991 are:

Total publications processed	1,650 @	$1,400

National Water-Quality Assessment Program

Objective: To describe the status and trends in the quality of the Nation's surface-water and ground-water resources and to provide a sound, scientific understanding of the primary natural and human factors affecting these conditions.

Base Program: To support the development of national, regional, and local decisions related to water quality, the Department of the Interior (DOI), in consultation with other Federal and State agencies, is developing a National Water-Quality Assessment (NAWQA) Program. The program will build upon an existing base of ongoing water-quality activities of the USGS, as well as other Federal, State, and local agencies. Testing and refining the methods for a NAWQA Program began as a pilot effort in 1986. Currently, USGS is completing pilot projects of surface-water and ground-water quality in seven areas across the country. Federal, State, and local agencies participate on the seven pilot project liaison committees and are actively involved in coordination and, to some extent, implementation of the pilot program. A National Coordinating Work Group for the NAWQA Program, organized under the authority of OMB Circular A-67, includes high-level representation of Federal, State, local, and private sector interests. All of these groups have made significant contributions that will help ensure that the information produced by the program meets the data and analysis needs of other Federal, State, and local agencies to the maximum extent possible.

The National Academy of Sciences (NAS) is also nearing completion of an independent evaluation of the program. A preliminary report from the NAS on the NAWQA Program indicated that a national scale, long-term water-quality assessment program is needed and that the USGS is well qualified to implement the proposed NAWQA Program because of the Geological Survey's nonregulatory mission and because of its ability to undertake the long-term commitment necessary for such a program to be successful. A final report from the NAS evaluation is scheduled for completion in April 1990. The USGS will conduct a symposium/workshop with other Federal agencies in March 1990 to continue efforts to coordinate with respect to their needs for water-quality information.

Increase for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	7,126	18,126	+11,000
FTE	90	140	+50

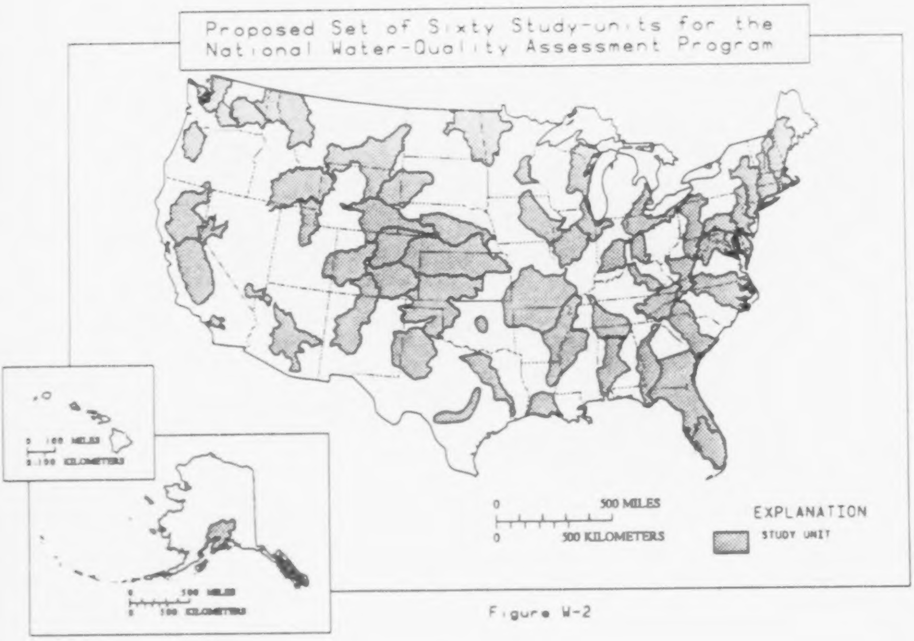
It is recommended that FY 1991 be the first year of a multi-year transition from the pilot program to the full-scale national program. This recommendation is based on the experience gained in the NAWQA pilot program, recommendations made by the NAS, and on the Administration's finding that a NAWQA Program would produce information needed to describe and better understand the status and trends in the quality of the Nation's surface-water and ground-water resources. In addition, some funds will be used to complete the seven pilot projects in FY 1991.

A. Implementation of a Full-Scale National Water-Quality Assessment Program

A draft report that describes plans and resource requirements needed to implement the design concepts in a full-scale program has been completed and will serve as the blue print to guide a multi-year transition to a full-scale NAWQA Program. When fully implemented, the program will require annual appropriations of about $60 million.

1. Study-Unit Investigations

A preliminary set of 60 combined surface-water and ground-water "study units" have been selected that will comprise the full-scale program (Figure W-2). These study units are large river basins and aquifer systems that range in size from a few thousand to several tens of thousands of square miles. These study units represent a wide range of settings nationwide and in aggregate, account for a large percentage of the Nation's water use. Assessment of these individual hydrologic systems will form: (1) basic building blocks of knowledge that provide a basis for resource decisionmaking within the river basins and aquifer systems themselves; and (2) a foundation for aggregation and synthesis at the regional and national levels to address issues of larger scope. A particular advantage of the study-unit concept is that the investigations will be carried out by hydrologists familiar with the individual hydrologic systems.


Proposed Set of Sixty Study-units for the National Water-Quality Assessment Program
0 100 MILES
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EXPLANATION
STUDY UNIT

Figure W-2

The table below shows the number of study-unit investigations to be underway and projected resource requirements (expressed in current dollars) for a full-scale National Water-Quality Assessment Program, fiscal years 1991-2000:

Fiscal Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Number of studies in progress	27	27	27	47	47	47	60	60	60	60
Total Costs ($Millions)	18	22	48	53	61	61	61	61	61	61

Surface-water and ground-water quality will be studied jointly in the program. One of the major contributions of this design will be to identify and describe the interactive effects between surface water and ground water that are most important to understanding the quality of the Nation's water resources.

Procedures have been established to assure the necessary consistency among the study-unit investigations in study approaches, field and laboratory methods, and water-quality, and ancillary data measurements. Reviewing and improving these methods will be a continuing element of the program. Key topical areas of methods development are: (1) improved techniques for water-quality sampling from ground water and surface water; (2) improved analytical methods for quantifying the levels of trace elements and trace organic compounds in water, sediment, and tissue; (3) improved biological assessment techniques (done in coordination with other Federal and State agencies and universities); and (4) improved statistical methods for interpreting water-quality data.

Assessment activities in each of the study units will be done on a rotational rather than a continuous basis to reduce annual requirements for personnel and budgetary resources. Twenty study units will be studied in detail at a given time. For each study unit, periods of intensive data collection and analysis will be alternated with periods during which the assessment activities will be less intensive. The initial intensive phase in each study unit will lead to a characterization of present water-quality conditions and will provide an understanding of the factors influencing these conditions. Subsequent periods of intensive data collection and analysis will focus on the changes that are occurring through time.

A typical study-unit investigation will proceed through a sequential series of five phases: (1) project planning--1 year; (2) analysis of available information and reconnaissance sampling--1 year; (3) intensive data collection and interpretation--3 years; (4) report completion--1 year; and (5) low-level sampling--4 years. The first cycle of all 60 study-unit investigations will be completed in about 10 years. Planning studies will be started in 20 study units during FY 1991. The first set of study units will be selected to ensure:

(1) a good distribution among the major hydrologic regions of the Nation; (2) support for the President's Water-Quality Initiative which focuses on agricultural sources of surface-water and ground-water contamination; and (3) relevance to the information needs of other Federal agencies. Selection of the first 20 study units will be made following a symposium and work shop with representatives from other Federal agencies in March 1990.

2. Regional and National Assessment Reports

Information from the individual study-unit investigations will contribute to efforts focused at addressing topics of regional and national interest. Topical reports will be prepared every year, beginning near the completion of the first set of 20 study-unit investigations in FY 1995. During most years, these reports will focus on a specific water-quality issue. The selection of water-quality topics addressed will be heavily influenced by the information needs of other Federal agencies. For example, reports during the early years of the program are likely to focus on topics associated with agricultural sources of surface-water and ground-water contamination such as:

- Occurrence and concentrations of pesticides in ground and surface water in relation to human and aquatic health criteria. The extent and severity of surface-water and ground-water contamination from pesticides in the United States is unknown. The NAWQA Program will provide considerable information on the degree of contamination of ground water and surface water by many potentially toxic substances for which few data currently exist. Information to identify those stream segments and parts of the ground-water resource with prevalent pesticide contamination and those parts relatively free of pesticide contamination will be useful to other agencies and the private sector for targeting both prevention and response efforts and for assessing progress in managing different pesticides.

- Relation of pesticide occurrence in ground water and surface water to pesticide application rates, cropping practices, and climatic, geologic, and soil factors. Information on the factors affecting ground-water and surface-water contamination by pesticides in different areas will be useful for: (1) developing effective strategies for preventing and responding to pesticide contamination; (2) evaluating whether pesticide regulations can be targeted to geographic regions or hydrologic settings rather than using rigid nationwide standards that may overprotect the resource in some areas and underprotect it in others; and (3) developing more efficient monitoring strategies.

- Affects of agricultural best management practices (BMPs) on surface-water and ground-water quality. Information relating water-quality conditions and changes in these conditions to uses of BMPs (such as no-till and contour farming) and other environmental factors will be useful to the States, Department of Agriculture, EPA, and farmers for determining the effectiveness of different BMPs under different hydrologic settings and conditions and considering their use for controlling nonpoint sources of contamination.

- **Relative magnitudes of various point- and nonpoint source contributions to different types of surface-water and ground-water contamination. The States and EPA generally recognize that available programs and information are insufficient to determine the magnitude and extent of nonpoint-source contamination problems and to pinpoint the primary causes of these problems. A major emphasis of NAWQA is on providing information on nonpoint-source contamination, which will help the States to identify critical areas on which to focus their nonpoint-source management efforts.** Information on the relative magnitude and extent of different types of nonpoint source contamination nationwide, as well as on a regional basis, will help EPA to allocate budgetary resources efficiently under Section 319 of the Water-Quality Act of 1987.

The list of topics to be addressed will be reviewed at least annually and refined based on findings from study-unit investigations, and other programs, and advice from the National Coordinating Work Group, technical advisory committees, and relevant Federal and State agencies.

In addition to the topical reports, every 5 years, a separate report will present summaries of the status, trends, and key conclusions related to water quality for each study unit together with regional and national summaries of these findings.

Regional and national assessments of water-quality conditions and trends will rely on the results from the NAWQA study-unit investigations and will incorporate, as appropriate, results from investigations by local, State, and Federal agencies and from other USGS programs

B. Completing Pilot Project Activities

Most of the field activities associated with the intensive study phase in the seven pilot projects will end in FY 1990. In FY 1991 some resources will be used to: (1) complete project reports and continue selected activities to assess changes in water quality in the seven areas; (2) continue a selected stream reach study in the Upper Illinois River basin that will start in FY 1990; (3) complete the testing of protocols for conducting ecological surveys and tissue analysis in surface water; and (4) continue developing and refining concepts for integrating surface-water and ground-water assessment activities in a single study unit.

Distribution of change by object class:

The object class detail for the proposed $11,000,000 increase is as follows:

	FTE	Amount
Personnel Compensation -----------------	50	$ 2,249,295
Personnel Benefits ---------------------		506,091
Travel and Transportation of Persons ---		750,000
Transportation of Things ---------------		750,000
Communications, Utilities, and Misc. Charges -----------------------		730,000
Printing and Reproduction --------------		300,000
Other Services -------------------------		2,764,614
Supplies and Materials -----------------		500,000
Equipment ------------------------------		2,450,000
Total ------------------------	50	$11,000,000

Global Change Hydrology

Objective: To develop data, understanding, and predictive capabilities concerning the role of water in large-scale environmental conditions, especially those associated with climate. This includes an understanding of the role of the hydrologic system in the development of the changing conditions and the impacts of the changes on the availability of water resources. This program is part of an integrated USGS effort that responds to the need for improved earth science information with respect to the issue of Global Change, and is an integral part of the U.S. Global Change Research Program research plan developed by the interagency Committee on Earth Sciences, of the Federal Coordinating Council on Science, Engineering, and Technology, under the Office of Science and Technology Policy.

Scientific consensus recently has been attained that mankind is modifying the earth's environment on a global scale (World Climate Programme, 1986). The chemical composition of the earth's atmosphere is being altered by a range of human activities from the relatively rudimentary slash-and-burn agricultural practices of the tropics to the most sophisticated worldwide uses of fossil fuels. This alteration is manifested most dramatically in atmospheric increases in greenhouse gases such as carbon dioxide, methane, and chlorofluorocarbons (CFCs) which have augmented the atmosphere's ability to retain the energy of the sun's radiation. An increased level of energy in the atmosphere portends changes in climate and concomitant changes in the hydrologic cycle.

Base Program: The program focus is on investigation of the linkages between the hydrosphere, geosphere, biosphere, and cryosphere. This includes: (1) studying the fluxes of moisture to, from, beneath, and across the land surface of the Earth; (2) studying climate induced impacts on major hydrologic units of the United States and improving evaluations of the sensitivity of water-resources systems to climate variability and change; (3) developing methods for increasing the sensitivity of data networks for detecting climate induced changes in the hydrologic cycle and changes in patterns of water use; (4) developing new concepts for incorporating hydrologic processes and hydrologic data in climate models, both for the purpose of improving the models and for improving their ability to provide information that is relevant to water-resources management; (5) quantifying and interpreting past hydroclimatic conditions as analogs for future hydrologic implications; and (6) developing information on the sources and sinks of naturally occurring greenhouses gases in a variety of hydrologic environments.

Formal coordination of the program has been established through the Federal Coordinating Council on Science, Engineering, and Technology Committee on Earth Sciences, and is a part of the Geological Survey's contribution to the U.S. Global Change Research Program. Through this coordination, the USGS will enhance technology transfer, minimize undesirable duplication of efforts, and obtain feedback to help set and refine our research priorities as the program develops.

FY 1990 Activities will include:

- Continuation of the integrated study of the potential impacts of climate change on the Delaware River Basin (begun in FY 1988).
- Continuation and enhancement of a joint program of research on the hydrologic aspects of general circulation models with the Geophysical Fluid Dynamics Laboratory (GFDL) of NOAA in Princeton, New Jersey. This collaboration began with the placement of one USGS hydrologist at GFDL in FY 1989. At present, USGS is highly dependent on GFDL in this relationship, and the Memorandum of Understanding between NOAA and USGS for this relationship calls for a greater commitment of resources by USGS.
- Continuation and enhancement of the collaboration on mesoscale atmospheric modeling (on a scale of 50,000-100,000 square kilometers) and paleohydrologic studies of the western United States with the National Center for Atmospheric Research (NCAR) of the National Science Foundation in Boulder, Colorado. The USGS had two hydrologists located there in FY 1989.
- Hydroclimatology studies -- assembly of high-quality long-term streamflow records, analyses of the relationships between streamflow conditions and atmospheric circulation.
- Participation in the Intergovernmental Panel of Climate Change, Working Group II (Impacts). USGS has taken on responsibility as co-chair of the sub-group on water resources impacts for this international effort. There also will be a large number of other interagency and international coordination activities that require financial support and staff time.
- Detailed project planning and staffing for two new integrated basin studies to be conducted jointly with the Bureau of Reclamation (BuRec) beginning in FY 1991. This planning will be undertaken in collaboration with BuRec. During 1989, USGS and BuRec held a series of meetings to discuss the goals and logistics of undertaking such joint investigations. As a result of these meetings, the two agencies agreed to focus their efforts on two regional studies. One is a paired basin study that straddles the Sierra Nevada involving the American and Stanislaus basins in California and the Carson and Truckee basins in Nevada. These basins will facilitate detailed analysis of the effects of climatic variability

and change on water resources on both sides of a mountain barrier. The second is an intensive study of the Gunnison basin in Colorado.

In FY 1991, the water resources activities of the USGS considered to be "focused" on Global Change (based on the Committee on Earth Science classification system) would total $8,400,000 and would include: (1) all funds requested for the Global Change Hydrology line item, (2) an estimated $200,000 million in the Water Resources Research Act Matching Research Grants line item, and (3) an estimated $1,200,000 million in funds under the Core Program Hydrologic Research line item. This total represents a net increase of $4,200,000 above the 1190 focused program.

Increase for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	1,980	6,980	+5,000
FTE	11	37	+26

The proposed increase will be used to initiate or increase research activities regarding: (1) interaction of climate and hydrologic systems; (2) sensitivity of hydrologic systems; and (3) biogeochemistry of greenhouse gases.

o Interaction of Climate and Hydrologic Systems:

The transfer of water and energy between the land surface and the atmosphere is important both as a determinant of climate and as a determinant of water availability. To incorporate these water and energy transfers into climate models, major simplifications and spatial averaging of the processes are required. The shortcomings of these techniques remain a major weakness of existing climate models. A major emphasis of this research element is to translate process understanding of hydrologic systems from the plot or basin scale up to continental and global scales and provide improved terrestrial hydrologic system models for use in the global models.

The program will involve measurements and research on: the fluxes of water and energy at the land surface; the behavior of glaciers, ice sheets, and sea ice; the relations between large-scale climatic conditions and regional hydrologic variability; and land-atmosphere feedback mechanisms. This program will provide significant new information on processes governing the global hydrologic cycle and will enhance the representations of terrestrial hydrology and the cryosphere in climate models.

o Sensitivity of Hydrologic Systems:

Perhaps the single most significant of all the effects of global climate change is the effect on the availability of water. Water resource managers need to have methods for assessing the sensitivity of the systems they manage to changes in climate, CO_2 concentrations, and sea level. Equally important is the need for methods of evaluating the risk or uncertainty associated with any such assessments. Many of the existing predictive tools (watershed models) are not sufficiently focused on the water and energy balance issues to provide the necessary answers.

Virtually all techniques of hydrologic analysis rely on the assumption of a stationary climate. At present, there exists no formal methodology by which the effects of assumed climate change, expressed as meteorologic functions, can be integrated into hydrologic models. Development of such methods is central to this program.

This program will extend the development of methodologies for predicting river basin responses to global change beyond the study currently underway in the Delaware River Basin. It will involve cooperative river basin investigations by the USGS and the Bureau of Reclamation in the Carson-Truckee and American-Stanislaus drainages, in California and Nevada, and in the Gunnison Basin of Colorado. These sites were selected to highlight several important issues not covered in the Delaware Basin study: orographic effects (effects of the presence of mountains), snow accumulation and melt, and effects of climate and CO_2 concentration changes on irrigation and other water demands. The cooperative studies to begin in FY 1991 will emphasize the estimation of the relations of climate change to changes in evapotranspiration, runoff, ground-water recharge, water use, and resulting changes in water quality. Additional studies in river basins in other types of hydrologic environments are planned to begin in FY 1992 and future years.

o Biogeochemistry of Greenhouse Gases:

A key aspect of predicting the future concentrations of the natural greenhouse gases in the atmosphere is an understanding of the sources and sinks of these gases in terrestrial systems. Many of the pathways for carbon (as well as nitrogen and phosphorus which are the major nutrients that control CO_2 production) are associated with the water fluxes that are a major topic of USGS global change research. Thus, it is logical and efficient to conduct research on the pathways of these gases and nutrients in conjunction with water balance and evapotranspiration studies of the USGS.

The program will focus on improving the understanding of the sources and sinks of carbon dioxide, nitrous oxide, and methane, especially as related to the hydrologic and geologic processes occurring in lakes, bogs, soils, the unsaturated zone, estuaries, natural gas seeps, permafrost, and marine and terrestrial carbonate rocks. It also will focus on understanding the mechanisms governing the flux of nutrients from terrestrial landscapes, through riverine systems, to coastal ocean regions. This program will include development of time-dependent models of the global carbon cycle focusing on the feedbacks between climate and the rates of exchange of greenhouse gases between the various reservoirs and subsequent changes in gas concentrations.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adj Approp	FY 1991 Base	FY 1991 Estimate
Research studies or projects underway	--	18	18	25

Average unit costs for selected program outputs in FY 1991 Estimate:

Research studies or projects underway	25 @ $275,000

Distribution of change by object class:

The object class detail for the proposed $5,000,000 increase is as follows:

	FTE	Amount
Personnel Compensation -----------------	26	$ 972,338
Personnel Benefits ---------------------		218,776
Travel and Transportation of Persons ---		300,000
Transportation of Things ---------------		150,000
Communications, Utilities, and Misc. Charges -----------------------		250,000
Printing and Reproduction --------------		125,000
Other Services -------------------------		2,608,886
Supplies and Materials -----------------		125,000
Equipment ------------------------------		250,000
Total ------------------------------	26	$5,000,000

Justification of Program and Performance

Activity: Water Resources Investigations
Subactivity: National Water Resources Research & Information System - Federal/State Cooperative Program

(Dollar amounts in thousands)

Program Elements		1990 Enacted to Date	1990 Adjusted Approp.	1991 Base	1991 Estimate	Inc.(+) Dec.(-) from Base
Data Collection & Analysis, Areal Appraisals, & Special Studies	$	55825	55070	56483	52232	-4251
	FTE-T	1454		1439	1394	-45
Water Use	$	3958	3904	3933	3915	-18
	FTE-T	32		32	31	-1
Total Requirements	$	59783	58974	60416	56147	-4269
	FTE-T	1486		1471	1425	-46

Impact of Public Law 99-177

	1990 Enacted to Date	PL 99-177 B.A. Cancellation	1990 Adjusted Approp.
Nat'l Water Resources Res & Info. Sys-Fed/State Coop Program	59783	-809	58974

The impact of this reduction on this subactivity will decrease the operating funds for all projects and result in curtailed field work, equipment purchases, and data analysis.

A reduction of $879,000 is being proposed in the Federal Program subactivity in lieu of any attempt to collect, and then sequester, funds provided by State and local goverment agencies under the Federal-State Cooperative Program.

Authorizations

43 U.S.C. 31,49,50	(Organic) Act of March 3, 1879, as amended (1928, 1935); and restated in annual appropriation acts--most recent: P.L. 101-121, October 23, 1989; the language is "... no part of this appropriation shall be used to pay more than one-half the cost of any ... water resources investigations carried on in cooperation with any State or municipality."

33 U.S.C. 1251 et seq.	Federal Water Pollution Control Act Amendments of 1972 and its successors, the Clean Water Act of 1977 and the Water Quality Act of 1987, authorize extensive water-quality planning, studies, and monitoring under the direction primarily of the EPA. The Geological Survey is called upon to participate in many of these activities, partly by EPA and partly by State agencies in the Federal-State Cooperative Program. The act of 1987 includes new water-quality work concerning Chesapeake Bay, the Great Lakes, Estuary and Clean Lakes Programs, and studies of water pollution problems in aquifers.
(P.L. 93-322 88 Stat. 276)	Special Energy Research and Development Appropriation Act, 1975, provided funds "for energy research and development activities of certain departments ...." The Geological Survey's water resources investigations in coal hydrology support that legislation.
30 U.S.C. 1201 et seq.	Surface Mining Control and Reclamation Act of 1977, as amended, established the Office of Surface Mining Reclamation and Enforcement (OSM). OSM depends in part upon the Geological Survey for a determination of the probable hydrologic consequences of mining and reclamation operations.
42 U.S.C. 8901 et seq.	Acid Precipitation Act of 1980 (Title VII of the Energy Security Act) calls for an "Acid Precipitation Program and Carbon Dioxide Study." The Geological Survey is an active participant in the ensuing studies of acid precipitation as a result of prior work in this field in the Federal and Federal-State Cooperative Programs.
42 U.S.C. 9601 et seq.	Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) established a superfund to pay in part for the massive cleanup programs needed at sites that are heavily contaminated with toxic wastes. The Geological Survey is called upon by EPA and State agencies to investigate and determine the extent of contamination and remedial measures at some of these sites. The amendments of 1986 reauthorize for 5 years EPA's program to clean up the Nation's worst toxic dump sites.
63 Stat. 145 (P.L. 81-82, Arkansas River Compact)	Congress has granted its consent to many interstate water compacts. For 10 such compacts including two noted), the Geological Survey provides administrative support for the Federal representative, usually appointed by the President. Also, the Geological Survey collects the hydrologic data needed for

65 Stat. 663, (P.L. 82-231, Yellowstone River Compact)	administration of 25 interstate compacts. The data collection is supported partly the Federal Program and partly by the Federal-State Cooperative Program.
42 U.S.C. 10301 note	Section 1121, the Water Resources Development Act of 1986 (P.L. 99-662), amends the Water Resources Research Act of 1984 by adding, as title III, "Ogallala Aquifer Research and Development."

Data Collection and Analysis, Areal Appraisals, and Special Studies

Objective: To maintain cooperatively, through Joint Funding Agreements (50-50 matching), a continuing record of the quantity, quality, and use of the Nation's surface-water and ground-water resources; to improve the hydrologic information available for use by Federal, State, and local agencies in developing, utilizing, conserving, and managing water and land resources to meet the Nation's needs for water, and to fulfill the mandated requirements for clean water, pollution abatement, and environmental protection; to assess hydrologic conditions and water-supply problems related to mining and mine-reclamation, land reclamation, and agricultural activities; and to provide continuing analytical, interpretive, and predictive studies and appraisals of the quantity, quality, and use of the Nation's water resources.

The Federal-State Cooperative Program is a major part of the Geological Survey's coordinated program of water-resources investigations. In many places, the Cooperative Program provides the only source of support for water-data collection and investigations required to assess, on a continuing basis, the status of the Nation's water resources. Clearly, the Cooperative Program cannot, and does not, exist apart from other activities conducted within the overall Water Resources Investigations program of the USGS. The sum total of efforts performed in the Federal, the Federal-State Cooperative, and the Water-Resources Research Act subactivities represents a balanced, coordinated, and interactive program of fact-finding, investigations, and research regarding the Nation's water resources. The USGS and its more than 1,000 cooperating agencies work together in a continuing process that leads to adjustments in each year's Federal-State Cooperative Program to address emerging national water issues. Key hydrologic concerns and issues requiring priority consideration in the selection of new activities, or the retention of ongoing activities, are determined through discussions with State and local cooperators, with Federal agency officials, by guidance from Congress and the Department of the Interior, and through awareness of the concerns of the general public. For 1990, of the water issues identified as major national concerns, seven were considered of highest priority in developing the program: ground-water quality; water supply and demand; stream quality; hydrologic hazards; wetlands, lakes, and estuaries; hydrology and changing climate of atmospheric chemistry; and hydrologic effects of fossil fuel and mineral extraction.

The enormity and complexity of appraising the Nation's water resources preclude accomplishing the task by Federal efforts alone. Similarly, State and local officials working independently do not always relate to the larger regional or national aspects of the hydrologic systems. Cooperative planning of data collection and investigations by local, State, and Federal officials permits a more balanced approach to water-related problems. Information developed in the Cooperative Program has relevance to potential and emerging long-term problems, such as water supply, waste disposal, energy development, and environmental management and protection. Since common analytical methods and techniques are used, the information also is relevant to problems having interstate, regional, national, or international significance. The information furnishes the basis required to carry out interstate and international compacts, Federal law and court decrees, congressionally mandated studies, regional and national water-resources assessments, and planning activities. It also expedites the preparation of applications for mining permits and mine plans by the coal industry, by providing needed hydrologic data, and aids State authorities in reviewing the applications and plans. Also, it provides support for most of the streamgaging stations used by the National Weather Service for flood forecasts and warnings.

Base Program: Development, utilization, and conservation of the Nation's water resources require an adequate data base. The continuing Cooperative Program provides more than half the Nation's data and information base regarding water quantity and responds in a timely manner to the varying and increasing requirements of agencies at all levels of government that have responsibilities for water resources. The program is developed in response to mutual local, State, and Federal needs. Information and issues that are identified through the National Water Summary are taken into consideration in developing program priorities for water resources investigations in the Federal-State Cooperative Program, and overall Federal priorities are employed in the selection of projects for joint funding. Most Federal matching funds are allocated on the basis of national priorities after an indepth project-by-project review. Ongoing activities in each District are evaluated at least annually by the Regional Offices, and the regional programs are reviewed in the fall of each year by the Headquarters staff. In addition, technical reviews are conducted by Headquarters and Regional staff at each of the USGS District Offices in the surface water, ground water, and water quality disciplines.

It is presently estimated that the level of cooperator interest in the entire program in FY 1991 will be expressed in their identification of $76,547,000 in water resources investigations as candidates for matching Federal funds (see Figure W-3, page GS-278). The State offerings reflect the continuing growth in emphasis on water-quality issues, as well as on other concerns regarding the availability and distribution of the resource. Overall, there is an increasing need for hydrologic information at local, State, regional, and national levels.

Existing hydrologic data commonly are used in appraisals and studies. However, in many cases it is necessary to collect additional data and information which complement the available information. All data and analytical studies are made available to users through reports of investigations, the National Water Data Storage and Retrieval System (WATSTORE), the National Water Data Exchange (NAWDEX) Program, and various publications. Within the Federal-State Cooperative Water Resources Investigations program, typically about half the funds appropriated are used to support the collection of basic hydrologic data; the remaining half support the conduct of hydrologic studies and investigations.

a. Cooperative Data Collection Activities - Cooperatively funded hydrologic data-collection activities are underway in every State, Guam, Puerto Rico, and the U.S. Virgin Islands. Practically all the Geological Survey's data collection stations serve several purposes. In addition to providing information responsive to State or local needs, the Federal-State Cooperative Program stations (see Figure W-1, page GS-219) provide information that satisfies the needs of many Federal agencies--for example: flood prediction, land-use planning, streamflow regulation, hydroelectric power production, waste disposal standards, pollution regulation, highway structures, coal mine permits, and land reclamation. For example, of the 7,239 continuous streamflow measurement stations operated by the USGS, about 3,000 are currently used by the National Weather Service for flood forecasting. The operation of data-collection network stations is a continuing activity. Although many data-collection stations are operated on a long-term basis as components of national networks, some are discontinued each year when their purpose has been served; new stations are added in response to changing needs and priorities.

Figure W-1 (page GS-219) shows that in FY 1989 the Federal-State Cooperative Program provided sole support for more than half the continuous streamflow measuring stations in the total USGS network; and, in combination with other funding sources, provided partial support for another 15 percent of the total network of these stations.

In FY 1989, the Cooperative Program supported the collection of data on ground-water levels at nearly 30,000 public and privately-owned wells. Water-level data are used to assess changes in ground-water storage that can result from natural causes or from human activities. Selected water-quality measurements are made at about 20 percent of those wells. These data are necessary to determine suitability of water for various uses, to identify trends, and to evaluate the effects of stresses on aquifer characteristics. Overall in FY 1989, the Cooperative Program accounted for about 80 percent of the Geological Survey's activities in ground-water data collection.

In FY 1988, the USGS began a cooperative effort in increased ground-water level monitoring activities associated with the Ogallala aquifer. As part of the High Plains Aquifer Monitoring Program, monitoring activities of aquifer conditions have been expanded. The work differs from State to State, but includes the drilling of additional monitoring wells and the measuring of additional water levels in wells to increase data available for this region; the installation of continuous water-level recorders to help define fluctuations in water levels; and the compilation of existing data into compatible formats.

b. Cooperative Hydrologic Studies and Investigations - In addition to the data-collection activities, approximately 540 hydrologic investigations will be underway in FY 1990 at the Enacted level. Areal water-resources appraisals (which range from small basin or county to statewide or regional in size) define, characterize, and evaluate the extent, quality, and availability of the water resource. During the past decade or so, increasing emphasis has been given in the conduct of these investigations to water-quality issues, including ground-water contamination, acid rain, river-quality assessments, storm runoff, and the effects of coal mining (hard minerals mining) and agricultural activities on the hydrologic system.

Special analytical and interpretive studies address existing and foreseeable hydrologic conditions and problems, are somewhat more specific in nature and smaller in size than areal appraisals, and commonly involve applied research. They may require from a few months to 2 or 3 years to complete, and result in analytical, interpretive, and predictive reports, data, and information leading to the solution of problems or more effective management of the Nation's water resources.

Deterioration in the quality of water supplies for domestic, municipal, industrial, and agricultural uses is a growing problem, which can affect human health as well as the economy. In spite of considerable progress in solving complex water problems, stresses impacting the quality of the surface and ground waters are increasing. Ground water supplies drinking water for at least half the Nation's population. In some places, especially in densely populated and industrialized areas, disposal of toxic wastes has made ground water unsafe for use. For an isolated point source of contamination, such as an industrial disposal pond, the consequences may be severe in magnitude but only local in extent. In some places, however, many separate agricultural and industrial activities located over a large area are contributing to widespread contamination. The Nation's rivers have historically been used for water supplies, dilution of waste, recreation, commerce, and for production of fish and other aquatic crops. These uses are not all compatible, and over time many problems have surfaced which the Nation is attempting to solve.

The Nation's ability to cope with new and challenging problems in ground-water development and management rests in large measure on information from investigations conducted during the preceding years in the Cooperative Program. In the early days, ground water was investigated almost entirely within this program. Furthermore, the matters of underground waste storage, urban and agricultural runoff, and saltwater intrusion, for example, were recognized as problems of grave concern in the Cooperative Program long before rising to national attention. By the late 1890's, the USGS was investigating problems of water-resources contamination, and until 10 years ago, most of the emphasis on contamination concerns was concentrated in the Cooperative Program. From 1977 through 1982, approximately 60 such investigations were in progress each year. By 1983, the number began to increase--in 1985 there were more than 100, and in 1988, the number was about 150. Investigations such as these provide fundamental information on the extent and effects of contaminants in the water-resources environment, as well as facilitating the development of plans for remedial actions. They also can serve as the basis for pollution control and waste-reduction efforts. Investigations that characterize present levels of contamination are essential for evaluating the effectiveness of each approach and for compliance monitoring.

Priorities for data collection and hydrologic investigations are based on a detailed analysis of water problems and issues. In FY 1990 and FY 1991, cooperative investigations will address a variety of water-quality concerns including ground-water and surface-water quality, waste disposal and pollution, as well as problems and needs related to water resources availability and distribution. These studies respond to the increasing need for information at local, State, regional, and national levels. The final selection of new projects is timed to coincide with critical points in the budgetary cycles of the Federal government and the numerous State and local cooperating governments. With respect to the Federal government's budgeting cycle, specific negotiations for the upcoming fiscal year regarding individual projects are initiated with cooperators during January - March and are based on the provisions of the President's Budget submission to Congress and may subsequently be modified based on appropriations actions taken by Congress.

Examples of recent cooperative investigations include:

- Improved disposal and removal of hazardous wastes, New Jersey -- Millions of dollars are spent annually to provide safe disposal of hazardous wastes and to remove hazardous wastes from contaminated ground-water systems. The effectiveness of these activities might be increased significantly by use of surfactants (surface-active agents), which can change a soil's ability to adsorb contaminants. The USGS, in cooperation with the New Jersey Department of Environmental Protection, is studying how some surfactants that reduce soil adsorption could facilitate the removal of contaminants from aquifers by pumping from wells. Other surfactants that increase soil adsorption might be used to retard migration of contaminants from land disposal sites. The resulting information on the effects of surfactants on contaminant movement may help reduce costs for land disposal of hazardous waste and for aquifer-restoration efforts.

- Selenium in ground water, Powder River basin, Wyoming -- In cooperation with the Wyoming Department of Environmental Quality, the USGS is conducting an investigation of geochemical processes controlling the concentration of selenium in ground water from coal-mine spoils. The shallow ground water affected by surface-coal mining in the Powder River basin is an important domestic and livestock water supply. Results from the study will be used by State regulatory agencies to evaluate aquifer reclamation strategies at surface-coal mines where there are large concentrations of selenium in the overburden.

- Pesticides in soil and ground water, Iowa River Basin, Iowa -- Recently established ground-water quality monitoring programs have detected pesticides in significant numbers of shallow ground-water supplies throughout Iowa. Increasing concern about the leaching of agricultural chemicals into aquifers has highlighted the need to better understand the movement of these contaminants. Data collected by the State indicate that nearly 56 million pounds of herbicides are applied annually to Iowa fields. In cooperation with the University of Iowa Hygienic Laboratory, the USGS is evaluating the movement and distribution of selected pesticides in the field environment. The investigation is focusing on the leaching of these chemicals to shallow ground water. The specific objectives are to determine the distribution of selected pesticides in the soil and the characteristics of pesticide movement from the land surface to shallow ground water.

- Hazardous waste landfill near Pinewood, South Carolina -- One of two landfills in the southeastern United States permitted to accept hazardous waste is located near Pinewood, South Carolina. Since 1977, approximately one billion pounds of ignitable, corrosive, acutely hazardous, reactive, and toxic wastes have been buried at the 279-acre site. The landfill is located within 1,200 feet of Lake Marion, South Carolina's largest reservoir. This has raised concerns about potential contamination of the lake by possible leakage from the landfill. The USGS, in cooperation with the South Carolina Public Service Authority, is engaged in an investigation to characterize the geology, hydrology, water quality, and streamflow of the area. The regional extent of aquifers and the directions of ground-water flow are factors which determine the fate of potential contaminants and their impacts on ground water and surface water in the vicinity of the landfill. Data from the investigation will be used to develop a mathematical model of ground-water flow in the vicinity of the landfill, and a solute-transport model will be used to simulate various ground-water contamination scenarios.

- Effects of Agricultural best management practices:

  -- Patuxent River basin, Maryland -- Nutrients in runoff from agricultural areas in the Patuxent River basin significantly impact the water quality of the Chesapeake Bay. Best management practices, proposed to reduce the nutrients in runoff, may result in increased infiltration to the ground-water flow system. The management practices may, thus, enrich the concentration of nutrients in shallow ground water, which is the source of baseflow to streams and the Bay. In cooperation with the Maryland Department of Health and Mental Hygiene, the USGS is conducting an investigation to determine the effects of best management practices on ground-water flow and nitrogen concentrations. Digital models will be constructed for flow analyses under actual and proposed land-management scenarios.

  -- Lower Susquehanna River Basin, Pennsylvania -- The Pennsylvania Departments of Environmental Resources and Agriculture are testing traditional programs and best management practices for control of nonpoint-source runoff from agricultural land in the lower Susquehanna River basin. The USGS, in cooperation with the Susquehanna River Basin Commission, has underway an investigation to evaluate the effects of the various farming practices on nutrient and sediment discharges in the areas, as well as the impacts on the quality of water in the underlying noncarbonate rocks. The study will include an analysis of the relative influence on water quality of physiography, geology, soils, land use, and precipitation as they relate to best management practices.

- Agricultural chemicals in ground water and streams, Missouri -- The initial effort to document the occurrence of pesticides and nitrate in the water resources of intensively developed agricultural areas of Missouri took place in 1986 and 1987. The USGS, in cooperation with the Missouri Department of Health, sampled ground water and streams at 129 sites in the southeast lowlands area. Twenty-three different pesticides were detected, and at least one pesticide was present at most sites. Nitrate concentrations exceeded drinking water standards in 10 of 40 samples from domestic water supplies. As a continuation of this effort, in 1988 samples were collected and analyzed for pesticides and nitrate from approximately 60 domestic wells in the Missouri River alluvium, northwestern Missouri.

- Bridge scour in Delaware, Maryland, and Virginia -- The undermining (scouring) of bridge-pier and abutment foundations by erosive action of water can result in structural failure of bridges. Thus, the amount of scour likely to occur beneath bridge foundations is an important design criterion. The numerous equations developed to predict scour produce a wide range of estimates for the same set of conditions, and field data to test the validity of these equations are lacking. The USGS, in cooperation with State Highway Departments in Delaware, Maryland, and

Virginia, has begun a pilot study to develop techniques for measuring scour continuously at bridge piers so as to improve the predictive equations. Results of the study may result in significant cost savings for new bridge installations and improved evaluation of scour at existing bridges.

- Solute transport in the unsaturated zone, Tucson basin, Arizona -- In cooperation with the city of Tucson, the USGS is conducting an investigation of the mechanisms that control solute transport through the thick layers of unconsolidated, poorly sorted alluvial sediments of the Santa Cruz River flood plain near Tucson. The knowledge gained is expected to have application in determining how contaminants move through the unsaturated zone in alluvial basins throughout the arid Southwest. Preliminary findings indicate that chemical substances, such as pesticides, may move more freely through this zone than if the sediments were at or near saturation.

- Effects of land use on streams in North Carolina -- The North Carolina Department of Natural Resources and Community Development and the USGS are cooperating on the examination of the relationships among land use, water quality, and aquatic biota. The study is focusing on concentrations of suspended sediment, heavy metals, and nutrients in three streams in the North Carolina Piedmont. One of the streams drains a predominantly forested area, one drains an agricultural area, and one drains an urban area. The biological health of each stream is being measured by monitoring the macroinvertebrate communities. The data show that all three land-use types contribute high concentrations of suspended sediment to the receiving stream, but highest concentrations are found in the urban stream. In general, metals also are highest in the urban stream, but nutrients are substantially higher in the agricultural stream. Macroinvertebrate populations are good at both the forested and agricultural streams but very poor at the urban stream. Preliminary findings are that land-use controls (such as minimum setback requirements and low-density zoning) and good land-management practices are likely to benefit stream-water quality.

- Water quality of Cedar Creek, west-central Illinois -- In cooperation with the Illinois Environmental Protection Agency, the USGS has an investigation to describe the low-flow water quality of Cedar Creek in west-central Illinois and to identify the impact of combined-sewer overflows and urban runoff on that water quality. Measurements of traveltimes and reaeration rates have been used to develop a water-quality model. Initial results indicate that high sediment oxygen demands may be the primary cause of low dissolved-oxygen concentrations in the creek. Data are being collected to define the frequency and duration of overflows from combined-sewer overflow structures. Intensive monitoring of the quantity and quality of combined-sewer overflows, as well as flow from several storm sewers and tributaries, will be used to estimate the pollutant loads contributed from various sources. Findings of this study are intended for use by the Illinois Environmental Protection Agency in review and possible revision of current management practices and stream-quality standards.

- Ground-water/surface-water relationships, Massachusetts -- The flow in many small streams in the Northeast has been reduced to unacceptably low levels by pumping from nearby supply wells. Also, some municipal-supply wells have been closed because of infiltration of stream water of degraded quality. The USGS, in cooperation with the Massachusetts Division of Water Pollution Control, is using recently developed methods and technology to relate the physical and chemical properties of the stream water, streambed, and underlying aquifer to the quantity and quality of water withdrawn by wells. Results of this study may provide a basis for regulation of ground-water development in industrialized areas by State agencies throughout the Northeast.

- Ground water in Salt Lake County, Utah -- In cooperation with the Central Utah Water Conservancy District, the USGS developed a three-dimensional flow model to simulate possible changes of ground-water levels in Salt Lake Valley as the result of hypothetical pumpage at double the current rate for all large wells (larger than 150 gallons per minute), as well as pumpage from a postulated well field. At the increased rate of pumpage, it is projected that drawdowns would reach 40-60 feet in the area east of the town of Sandy. About 75 percent of the increased withdrawal would intercept water that otherwise would have been discharged to the Jordan River and its tributaries. Assuming the withdrawal of 30 cubic feet per second at the postulated well field, it would require about 3,900 years for the saline ground water from beneath Great Salt Lake to travel 7 miles to the well field. This model is expected to help understand several pressing problems regarding development of ground water by local municipalities and water-supply entities. Eventually, it may be used by local water managers to determine optimum patterns of wells and rates of ground-water withdrawal in the county.

- Flood capacity of the Puyallup River, Washington -- In cooperation with the Washington Department of Ecology, the USGS has an investigation underway to obtain information on: (1) present and past flood-carrying capacities and streambed elevations of the river channels (most of which are leveed) in the lower Puyallup River basin; (2) sediment processes in the rivers; (3) salmon and steelhead habitat; and (4) the interrelationships between proposed changes in river channels for flood control and streambed elevation, sediment processes, and fish habitat. This information is needed by governmental agencies that wish to make changes in the river channel for improving or maintaining present flood protection, and governmental agencies and Indian tribes that wish to maintain or improve present fish habitat in the rivers. Data show many feet of either aggradation or degradation at gaged locations, possibly associated more with man-made changes than with natural events. Sediment processes and fish habitat are still under investigation.

- Nutrients in wetlands streams, Florida -- Wetlands and the aquatic systems associated with them are valuable natural resources with respect to wildlife habitat, recreation, and waste disposal. In many areas, wetlands and wetland streams are widely utilized for the disposal and treatment of nutrient-enriched effluents such as stormwater runoff and treated sewage. A better understanding of the processes governing nutrient cycling and dissolved-oxygen concentrations in wetland streams is needed to determine wastewater treatment requirements and to properly assess the impact of nutrient-enriched effluents. Providing such an understanding is the objective of an investigation being conducted on a central Florida wetlands stream by the USGS in cooperation with the Reedy Creek Improvement District. The information provided by this investigation may be applicable to a large number of similar systems throughout the southeastern United States.

- Rainfall-runoff model, metropolitan Seattle, Washington -- A state-of-the-art computer model of rainfall-runoff relations in urban drainage basins, is being adapted by USGS in response to requests by planners and managers in the metropolitan Seattle area, Washington. The model has been calibrated in eight drainage basins in King and Snohomish Counties where rainfall and streamflow were monitored for 2 years. Data collection is being completed in six additional basins in King County for the purpose of verifying the regionalized model. King County is currently using the calibrated model as their primary tool for assessing a number of hydrologic issues related to urban development and basin planning. Snohomish County is just beginning to use the model, and a new cooperative program with Thurston County is expected to develop model parameters for some soil and land-cover types that are not present farther north in the region. The model has significantly added to the body of rainfall-runoff knowledge in the Puget Sound region, and is expected to lead to the development of additional methods and procedures for estimating floods at other locations throughout the country.

- Geohydrologic investigation of the Sacramento Valley area, California -- In cooperation with the California Department of Water Resources, the USGS is developing a geographic information system to store, manipulate, and analyze geohydrologic data for the Sacramento Valley area. This system will include logs from wells and test holes, geologic maps, soil surveys, pumpage records, and other topographic, geologic, and hydrologic data. The resulting information is expected to describe the nature of alluvial materials to a depth of 1,000 feet below land surface. Because most ground water produced in the area comes from this zone, an accurate description of the aquifer's properties is essential to further water-resources development and management.

- Pesticides at North Hollywood dump, Memphis, Tennessee -- The USGS, in cooperation with the city of Memphis, is conducting an investigation of hazardous wastes at a closed municipal-industrial landfill. The study area is the North Hollywood dump, which is Tennessee's top ranking site on the "Superfund" list of the U.S. Environmental Protection Agency. The city of Memphis is particularly concerned with the possible contamination of the underlying aquifer, which provides drinking water for almost one million people. Toxic wastes of primary concern at the landfill are residues of pesticide manufacturing. These chemicals have been detected in local soils, sediments, biota, and ground and surface waters. The goal of the investigation is to describe the present extent of contamination at the landfill and to estimate the potential for migration of toxic constituents outside the landfill.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adj Approp	FY 1991 Base	FY 1991 Estimate
Cooperative Data-Collection Activities	(See Figure W-1, page GS-219)			
Number of active Federal-State Cooperative Program studies and investigations	540	533	540	500

Average unit costs for investigations projects (Federal funds only) are about $55,000 in FY 1991.

Decrease for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	56,483	52,232	-4,251
FTE	1,439	1,394	-45

About half of the proposed decrease (i.e., approximately $2.1 million) results in a lower number of continuous-recording streamflow stations supported by this program element--approximately 700 stations. The other half of the decrease reflects a reduction of about 40 investigations supported by this program element. The 1991 level of effort is about 93 percent of the 1991 base level.

Distribution of change by object class:

The object class detail for the proposed $4,251,000 decrease is as follows:

	FTE	Amount
Personnel Compensation	45	$1,166,811
Personnel Benefits		262,532
Travel and Transportation of Persons		400,000
Transportation of Things		100,000
Communications, Utilities, and Misc. Charges		400,000
Printing and Reproduction		300,000
Other Services		871,657
Supplies and Materials		300,000
Equipment		450,000
Total	45	$4,251,000

Water Use

Objective: To carry out a National Water-Use Information Program to: (1) determine how much water is withdrawn for use, how much water is consumed during use, the purpose for which water is used, where and how much water is returned, the effect of use on water quality, and the factors which influence water use; and (2) make accurate, consistent, and timely water-use information available to water policy makers, planners, managers, and other potential users.

Base Program: The program was started in FY 1978 to provide for the comprehensive and systematic collection, storage, analysis, and dissemination of water-use data and information throughout the United States. The program is designed and managed by the Geological Survey and the system is being developed in stages in cooperation with State and Federal agencies. The labor-intensive collection of data at the field level is done by State or local agency personnel. Statistics on domestic, industrial, and agricultural water use are required for the planning, management, and development of the Nation's water resources and to provide information that will assist in identifying and resolving critical water problems related to resource allocations, environmental impacts, energy development, and water-quality residuals. The 12 major categories of water use for which information is being obtained are irrigation, livestock, commercial, domestic, industrial, mining, public supplies, sewage treatment; and fossil-fuel, geothermal, hydroelectric, and nuclear-power generation.

As the water-use data framework becomes better established at the State level, it is used by other Federal agencies and regional agencies. The USGS has been working with a number of agencies to provide them consistent and reliable water-use estimates. Specific examples are:

o A pilot project was completed in the eastern part of the United States for the Environmental Protection Agency to analyze water-use information to assist EPA in identifying and prioritizing those CERCLA toxic waste sites that might impact the quality of water withdrawn for public-supply systems, and thus impact the population served by those systems. Water-use information was retrieved from the USGS State Water-Use Data Systems and cooperator files and entered into a geographic information system for analysis. As a result of this pilot study, a similar study is being planned nationwide.

o The water-use data system is being used in regional assessment studies, such as those in the Delaware River Basin, Upper Colorado River Basin, and the Great Lakes area, to provide uniform, current, and reliable water-use data to regional planning and management commissions for determining present water uses and to provide for more efficient resource allocations. A major new study is planned to begin in FY 1990 in the Missouri River basin.

Also, data from the National Water-Use Information program is being used in the pilot National Water-Quality Assessment Program to help explain and predict changes in water quality, and in basin-analysis studies to determine the relationship between water supply and demand.

Program activities and recent accomplishments include:

National and State Water-Use Data Systems:

o The National Water-Use Data System (NWUDS), developed by the USGS, contains aggregate estimates of water use by county and hydrologic unit. These aggregate estimates are employed to analyze water-resources problems at the regional and national levels. The 1985 water-use estimates on the 12 major water-use categories are available for all States and Puerto Rico, by county and 4-digit hydrologic subregion.

- o The State Water-Use Data System (SWUDS), developed by the USGS, contains site-specific water-use information for individual users. Site-specific water-use information is employed to analyze water-resources problems at the local and State levels. Therefore, the two data systems provide the capability to store, analyze, and disseminate both aggregate and site-specific water-use information to meet the needs at local, State, regional, and national levels. The State data system is maintained in each State by either the Geological Survey's District Office or by a cooperating State agency.

Training: USGS co-sponsored a National Water Use Symposium with the American Water Resources Association in 1988. Plans for FY 1989 and FY 1990 include developing a water-use concepts course to be offered at the USGS National Training Center. Regional workshops also will be planned to cover more specific topics at the local level.

Equipment Research: Research and design of methods and equipment to obtain accurate water-use data are continuing. New non-intrusive flow meters have been developed and used in field applications to measure flow in a closed pipe to replace traditional meters which required installation inside the pipe. Remote sensing techniques are being examined for use in determining acres irrigated.

Publications: In fiscal years 1983-1988, more than 50 State water-use reports were published. A summary report, "Estimated Water Use in the United States in 1985," was published in 1988. The "National Water Summary, 1987," will summarize and expand the 1985 water-use information for each State.

Levels of State Participation in Water-Use Program: All States (except Vermont) and Puerto Rico are participating in the Water Use Program. Forty of the participating States and Puerto Rico have an operational State Water-Use Data System capable of storing and retrieving water-use data for the 12 major water-use categories. The remaining States have information for certain categories of water-use information and utilize their own data management systems for managing the water-use data. In some States that have completed data collection inventories, sampling strategies and techniques are being developed to update the data. Quality-assurance studies and interpretive water-use projects will be underway in many States. Program size varies with the degree of implementation of the program in each State and the availability of funding. The size of the Federal matching contributions to State water use programs will range from $15,000 to $170,000 in FY 1989 and 1990. The water-use program is now entering an operational phase that requires continuing data collection and development of methodology in estimating techniques, and includes interpretive and analytical water-use studies. This phase involves close contact and coordination with cooperating agencies and agencies accessing and employing water-use data in their activities.

Decrease for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	3,933	3,915	-18
FTE	32	31	-1

In FY 1991, the request is a result of reducing the rate of entry of water-use information into the National Water-Use Data System.

Distribution of change by object class:

The object class detail for the proposed $18,000 decrease is as follows:

	FTE	Amount
Personnel Compensation ----------------	1	$14,573
Personnel Benefits --------------------		3,000
Communications, Utilities, and Misc. Charges -----------------------		327
Supplies and Materials ----------------		100
Total -----------------------	1	$18,000

Estimated State and Other Non-Federal Agency Offerings

Estimated non-Federal offerings for the entire Federal-State Cooperative Program to be matched in FY 1990 and offered for matching in FY 1991 are shown in Figure W-3.

WATER RESOURCES INVESTIGATIONS -- FEDERAL-STATE COOPERATIVE PROGRAM ESTIMATES OF STATE AND OTHER NON-FEDERAL AGENCY OFFERINGS FOR FY 1991

(Thousands of Dollars)

State	Estimated State Funds to be Matched in 1990	Estimated Offerings for Matching 1991	Increase (+) Decrease (-)
Alabama	725	800	75
Alaska	950	999	49
Arizona	1,150	1,717	567
Arkansas	582	700	118
California	3,390	4,535	1,145
Colorado	2,186	2,078	-108
Connecticut	576	833	257
Delaware	190	295	105
Washington, D.C	6	6	0
Florida	5,452	7,030	1,578
Georgia	1,290	1,890	600
Hawaii	1,315	908	-407
Idaho	1,070	1,305	235
Illinois	860	1,000	140
Indiana	1,110	1,600	490
Iowa	800	855	55
Kansas	860	1,055	195
Kentucky	662	1,162	500
Louisiana	1,050	1,232	182
Maine	279	335	56
Maryland	967	1,600	633
Massachusetts	880	1,100	220
Michigan	703	850	147
Minnesota	806	950	144
Mississippi	770	1,250	480
Missouri	664	640	-24
Montana	769	825	56
Nebraska	700	708	8
Nevada	1,480	2,151	671
New Hampshire	471	550	79
New Jersey	1,772	2,500	728
New Mexico	1,540	1,535	-5
New York	2,810	3,800	990
North Carolina	1,250	1,500	250
North Dakota	642	735	93
Ohio	884	1,350	466
Oklahoma	1,085	1,145	60
Oregon	1,065	1,744	679
Pennsylvania	1,707	2,200	493
Rhode Island	272	230	-42
South Carolina	1,350	1,550	200
South Dakota	868	1,080	212
Tennessee	1,363	1,500	137
Texas	2,526	3,023	497
Utah	1,166	1,273	107
Vermont	60	150	90
Virginia	583	850	267
Washington	1,591	2,689	1,098
West Virginia	441	500	59
Wisconsin	1,214	1,400	186
Wyoming	1,006	1,233	227
American Samoa	50	162	112
Guam	60	102	42
Northern Marianas	20	167	147
Puerto Rico	1,575	2,500	925
Trust Terr. Pacific	120	170	50
Virgin Islands	50	500	450
Total	59,783	76,547	16,764

Summary for FY 1991	Estimated Offerings for Matching	76,547
	Budget Estimate	56,147
	Shortfall (Estimated Offerings in Excess of Budget Request)	20,400

Figure W-3

Justification of Program and Performance

Activity: Water Resources Investigations
Subactivity: National Water Resources Research & Information System - State Research Institutes, & Research Grants Program

(Dollar amounts in thousands)

Program Elements		1990 Enacted to Date	1990 Adjusted Approp.	1991 Base	1991 Estimate	Inc.(+) Dec.(-) from Base
State Water Resources Research Institutes	$	5677	5600	5677	2802	-2875
	FTE-T	0		0	0	0
Nat'l. Water Resources Research Grants Program	$	4381	4322	4381	1810	-2571
	FTE-T	0		0	0	0
Program Administration	$	768	758	724	617	-107
	FTE-T	9		9	7	-2
Total Requirements	$	10826	10680	10782	5229	-5553
	FTE-T	9		9	7	-2

Impact of Public Law 99-177

	1990 Enacted to Date	PL 99-177 B.A. Cancellation	1990 Adjusted Approp.
Nat'l Water Resources Res & Info. Sys-State Res. Inst., & Research Grants Program	10826	-146	10680

The $146,000 sequestration applied against the State Research Institutes and Research Grants Program subactivity in FY 1990 will result in reducing the grant to each of 54 Institutes by $1,400, and eliminating one competitive research grant or reducing the average size of the grants awarded by 1.4 percent.

Authorizations

42 U.S.C. 10301 *et seq.*	Water Resources Research Act of 1984 (P.L. 98-242) provides for water resources research, information transfer, and student training in grants and contract programs that will assist the Nation and the States in augmenting their science and technology to discover practical solutions to water shortage and quality deterioration problems.
42 U.S.C. 10301 note	Section 1121, the Water Resources Development Act of 1986 (P.L. 99-662), amends the Water Resources Research Act of 1984 by adding, as title III, "Ogallala Aquifer Research and Development."

Overview

The Nation is currently faced with a wide array of water-related problems for which ambitious remedial strategies are frequently proposed. The problems are complex in nature; uncertainties and controversies exist, not only with respect to remedial action, but with respect to the causes and extent of the problems themselves.

In enacting the Water Resources Research Act of 1984, the Congress recognized that small investments in research provide a more complete understanding of problems and can lead to larger savings. The act mandates that research investments be well placed and carefully monitored, that the most critical information needs be addressed, that research efforts be effectively coordinated and unnecessary duplication avoided, and that research results be communicated promptly to policymakers, management and regulatory agencies, and the public. The Congress and the Administration are presently considering proposals to reauthorize the Water Resources Research Act of 1984. These proposals, if enacted, could amend provisions of the current P.L. 98-242.

In FY 1991 this program is being administered in accordance with the provisions of P.L. 98-242 that were in effect for FY 1989 and continued in FY 1990.

State Water Resources Research Institutes Program (Section 104)

Objective: To operate Water Resources Research and Technology Institutes in each State which will plan, facilitate, and conduct research in water resources; to promote the dissemination and application of research results; and to provide the training of scientists and engineers through their participation in this research. The work of these Institutes is designed to aid in the resolution of State and regional water and related land problems.

Base Program: Section 104 of P.L. 98-242 authorized the establishment of 57 (maximum) Water Resources Research and Technology Institutes, one in each of the 50 States, the District of Columbia, and territories, with funding not to exceed $10 million in each of 5 years, and with a non-Federal to Federal cost-sharing ratio of 2:1 in 1989. The Water Resources Research Act of 1984 called for each Institute to be evaluated within the first 2 years of its establishment and to be reevaluated at intervals not to exceed 4 years. Detailed on-site evaluations of all 54 Institutes were completed by FY 1987 to determine their eligibility to continue to receive grants. Institutes will continue to be evaluated. A report on the evaluations of all Institutes was published in 1988.

Each Institute operates a program of multi-year research and information transfer projects focused on State and regional priorities. Students receive training by their participation in research or information transfer projects.

In the process of establishing annual priorities and evaluating project proposals, the Institutes work closely with each other, along with the USGS, to avoid undesirable duplication of effort. Institutes are responsible for the design and conduct of, and for reports on, their programs. The USGS evaluates each Institute program proposal based on adherence to priorities and consistency with the rules and regulations. It also reviews annual reports from Institutes on use of the grants.

More than half the expenditures in this program are for research on water-quality issues. The principal themes of this research are: contaminant-source identification, transport mechanisms, fate of contaminants, and methods to restore water quality or to prevent further degradation. Research on water shortages, the second major category, is conducted principally in the western States. Increased efficiency of irrigation, artificial recharge, and conjunctive use of surface and ground waters are the primary aspects of this category of research.

Information transfer consists of technical and non-technical reports, newsletters, seminars, and symposia to disseminate water resources news and research results to varied audiences. The USGS, by its guidance on proposal preparation, has begun to accelerate the process by which the Institutes transfer information derived from their own research programs, and from the research programs of others, directly to personnel in State water agencies.

In FY 1989, each of the 54 Institutes received a Federal grant of $105,000. In FY 1990, subsequent to sequestration, the grant to each Institute would be about $104,000.

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adj Approp	FY 1991 Base	FY 1991 Estimate
Number of functioning Water Resources Research and Technology Institutes	54	54	54	54

Decrease for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	5,677	2,802	-2,875
FTE	--	--	--

This decrease reflects a reduction in the amount of Federal grants to each of the 54 Water Resources Research Institutes to about $52,000 in FY 1991.

Distribution of change by object class:

The object class detail for the proposed $2,875,000 decrease is as follows:

	Amount
Grants, Subsidies, and Contributions ---	$2,875,000

National Water Resources Research Grants Program (Section 105)

Objective: To conduct research useful for the resolution of water resources problems facing the States, regions, or the Nation.

Base Program: The Geological Survey administers a program of grants awarded competitively to support research in major water resource problem areas. Under the provisions of Section 105 of the Water Resources Research Act, these grants can be made to Water Resources Research Institutes, universities, foundations, firms, individuals, or agencies of State and local governments. Grant recipients provide matching funds equal to the amount of the Federal grant award. In keeping with the intent of the act, the topical areas of research are broad, covering many disciplines. Topical areas of priority for research emphasis in FY 1990 are:

- Ground-water quality. A basic need in the field of hydrology is a better understanding of how contaminants move in ground-water environments. Methods of describing and predicting the behavior of contaminants in ground water are essential to the establishment of effective management procedures. Research emphasis should be on the transport and fate of contaminants, with particular attention to the physical, microbial, and chemical interactions encountered by contaminant substances transported in ground water. Investigations also are needed to develop better equipment and methodologies for monitoring and characterizing the physical, biological and chemical conditions in the subsurface environment, including sampling strategies that lead to an improved understanding of ground-water contamination at scales larger than single contamination sites.

- Water-quality management. In addition to the special needs for ground-water quality research, there is a clear need for research that will improve the scientific basis for management of water quality in all water-resources systems. Among the more critical research needs are study of the physical, microbial, and chemical interactions of waterborne synthetic and natural organic compounds and improved methods for treatment or control of contaminants in natural water systems. Research on biotechnology applications to water-quality monitoring and management, and on uses of and methods for treatment of water of impaired quality also need to be emphasized.

- Institutional, legal, and social aspects of water use and management. Research leading to solutions of institutional, legal, and social problems constraining the adoption of measures that could increase the effectiveness of water management is of high priority. Especially needed is research aimed at improving the efficiency of water-use in agriculture and at describing the hydrologic information necessary to support alternative institutional arrangements for allocation or reallocation of scarce water between competing uses.

- Climate variability and the hydrologic cycle. Recent advances in the study of the earth's climate indicate potentially dramatic shifts in the distribution of world water resources. For humankind to be well positioned to cope with these changes, a better understanding of the interactions between climate and hydrology needs to be developed. Specifically, research is needed on: (1) variability in precipitation, temperature, and runoff as related to variations in large-scale atmospheric and oceanic circulation; (2) evapotranspiration under a wide range of climate regimes; (3) improving the ability to predict the hydrologic response to major, large-scale, oceanic-atmospheric phenomena; and (4) the interrelations of the biosphere and the hydrologic cycle.

The history of the number of matching research grant proposals received and awarded follows:

Fiscal Year	Number of Research Grant Proposals: Received	Awarded
1985	368	24
1986	299	43
1987	274	34
1988	239	38
1989	260	36
1990 (estimate)	253	35

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adj Approp	FY 1991 Base	FY 1991 Estimate
Research Grants Awarded	36*	35	36	15

* From the 260 proposals evaluated in the FY 1989 competition, 36 were selected in the spring of 1989 to receive grants with the funds available. Federal costs for FY 1989 research grants range from $7,000 to $175,000, with an average Federal project cost of approximately $122,000.

Decrease for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	4,381	1,810	-2,571
FTE	--	--	--

At the requested level of funding, it is estimated that 15 research projects could be funded in FY 1991. This estimate has been determined employing the most recent average Federal grant of $122,000 for FY 1989.

Distribution of change by object class:

The object class detail for the proposed $2,571,000 decrease is as follows:

	Amount
Grants, Subsidies, and Contributions ---	$2,571,000

Program Administration

The Geological Survey administers and otherwise manages the State Water Resources Research Institute Program (Section 104) and the National Water Resources Research Grants Program (Section 105). Advisory assistance is provided by the Water Science and Technology Board of the National Academies of Science and Engineering on the priorities and procedures of the programs as called for by the act.

During FY 1989, all 54 existing Institutes applied for Federal grants under Section 104; each of these applications was reviewed, negotiated, and awarded. Procedures for the Institute evaluations, mandated by Public Law 98-242, were developed in FY 1985. Evaluations were conducted at three Institutes in FY 1985, 29 Institutes in FY 1986, and the remaining 22 evaluations were completed by mid-summer of 1987. A summary report of the evaluation effort was published in 1988.

The USGS administers the grant program mandated by Section 105 so as to encourage the interaction of investigators from a variety of disciplines and organizations. Procedures are in place to assure appropriate professional interactions between USGS scientists and engineers and grant recipients. Such interaction serves to strengthen both in-house USGS and water research grant programs.

All proposals made under the Grants Program are reviewed and rated by experts drawn from the academic community, the private sector, and government. Peer panels rank proposals and make recommendations for funding. Evaluation of the research is in terms of scientific and practical contributions as evidenced by publication in scientific journals, as well as technical reports, articles and presentations. The annual process of soliciting, evaluating, selecting, and providing support for research grants proposals occurs in the following time frame:

o 1st Quarter Fiscal Year--Candidate research grant proposals are submitted in response to publication of a nationally distributed USGS announcement as well as by notices in the Commerce Business Daily and/or the Federal Register.

- 2nd Quarter Fiscal Year--Research grant proposals are evaluated and selections for funding are made.
- 3rd and 4th Quarters Fiscal Year--Grants are awarded to selected applicants.

A report is prepared during the first quarter of each fiscal year which provides information on new research grants selected for inclusion in the program and research projects completed in the fiscal year just concluded. This report includes significant progress and accomplishments in projects funded in previous fiscal years. Open-File Report 88-179 "Water Resources Research Grant Program Project Descriptions, Fiscal Year 1987," was released in June 1988. Open-File Report 89-249, which addresses FY 1988 activities, was released in September 1989. A similar report for FY 1989 is being prepared and is expected to be released during the first half of Calendar Year 1990.

The responsibility of the USGS to provide an effective national water-resources research program as described in the legislation requires that an adequate structure be maintained to administer and evaluate the research program. This structure must provide for the review and ranking of all grant proposals received under Section 105 of Public Law 98-242 and the monitoring of all grants awarded under Public Law 98-242.

Decrease for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	724	617	-107
FTE	9	7	-2

In FY 1991, the decrease in funding for administration of the Water Resources Research Institutes and Matching Grants program is commensurate with the reductions proposed for these programs.

Distribution of change by object class:

The object class detail for the proposed $107,000 decrease is as follows:

	FTE	Amount
Personnel Compensation	2	$ 77,652
Personnel Benefits		17,472
Travel and Transportation of Persons		2,500
Transportation of Things		200
Communications, Utilities, and Misc. Charges		6,500
Printing and Reproduction		500
Other Services		1,676
Supplies and Materials		500
Equipment		0
Total	2	$107,000

U.S. GEOLOGICAL SURVEY
Analysis by Subactivity

Activity: General Administration

(Dollars amounts in thousands)

Subactivity	1989 Actual	1990 Approp. Enacted	1990 Adjusted Approp.	1991 Base	1991 Estimate	Inc. (+) Dec. (-) from Base
Executive Direction	4732	4765	4701	4904	6583	1679
Administrative Operations	9960	11629	11471	11759	11759	0
Reimbursements to the Department of Labor	1638	1935	1909	2546	2546	0
TOTAL	16330	18329	18081	19209	20888	1679

Activity Summary

General Administration

General administrative expenses provide for management, executive direction and coordination, and administrative support. Included are such essential functions as budget, program formulation and evaluation, finance, personnel, contract negotiation and administration, property management, organization and methods and management analysis. General administrative expense are financed in part by the budget line item, in part by recouping overhead costs from other Federal agencies and sundry non-Federal sources, and in part by user program service costs ($12,610,000). Global Change program coordination and Committee on Earth Sciences responsibilities within the Executive Direction subactivity are supported by funds from the Global Change programs in the Mapping, Geologic, and Water Resources budget activities ($300,000).

Justification of Program and Performance

Activity: General Administration
Subactivity: Executive Direction

(Dollar amounts in thousands)

Program Elements		1990 Enacted to Date	1990 Adjusted Approp.	1991 Base	1991 Estimate	Inc.(+) Dec.(-) from Base
Office of the Director	$	743	730	745	745	0
	FTE-T	8		8	8	0
Administrative Support	$	565	525	619	619	0
	FTE-T	6		6	6	0
Director's Senior Advisory Staff	$	589	592	595	595	0
	FTE-T	9		9	9	0
Program Development and Budget	$	1023	1006	1025	1025	0
	FTE-T	16		16	16	0
Global Change Research/ Committee on Earth Sciences (CES)	$	300	300	300	300	0
	FTE-T	3		3	3	0
Office of Congressional Liaison	$	230	230	231	231	0
	FTE-T	4		4	4	0
Office of Public Affairs	$	494	488	495	495	0
	FTE-T	10		10	10	0
Office of Equal Employment Opportunity	$	593	614	615	615	0
	FTE-T	13		13	13	0
Minority Participation in the Earth Sciences	$	650	639	650	650	0
	FTE-T	3		3	3	0
Secretarial Initiatives	$	0	0	21	1700	1679
	FTE-T	0				
Depart'l Working Capital Fund	$	78	77	108	108	0
	FTE-T	0		0	0	0
Total Requirements	$	5265	5201	5404	7083	1679
	FTE-T	72		72	72	0
Less Global Change/ CES Assess.	$	300	300	300	300	0
	FTE-T	0		0	0	0
Less Reimbursable Assessments	$	200	200	200	200	0
	FTE-T	0		0	0	0
Total Appropriated Funds	$	4765	4701	4904	6583	1679
	FTE-T	72		72	72	0

Impact of Public Law 99-177

	1990 Enacted to Date	PL 99-177 B.A. Cancellation	Adjusted Approp.
Executive Direction	4765	-64	4701

To achieve the spending target mandated by P.L. 99-177 (Gramm-Rudman-Hollings), cuts are being taken across-the-board in each activity within Executive Direction by attrition and other associated payroll and non-payroll costs, wherever feasible; i.e. overtime, travel, training, contractual services, equipment, supplies, etc.

Authorization

43 U.S.C. 31(a)	The Geological Survey's Organic Act establishes the Office of the Director of the Geological Survey, under the Interior Department. The Director is appointed by the President by and with the advice and consent of the Senate.

Objectives: To provide executive leadership, direction, policy and program guidance, and management coordination of all Bureau programs to serve the earth-science information needs of the Nation.

Base Program: Executive Direction of the Geological Survey consists of the following components: Office of the Director, Administrative Support, Director's Senior Advisory Staff, Global Change Research/Committee on Earth Sciences, Program Development and Budget, Office of Congressional Liaison, Office of Public Affairs, Office of Equal Employment Opportunity, Minority Participation in the Earth Sciences, and a Departmental Working Capital Fund.

Executive Direction functions are funded either by direct appropriation and assessment to Federal and non-Federal reimbursements or Survey user programs.

Major USGS continuing programs and new program initiatives support departmental and Administration stewardship objectives and reinforce the achievement of earth-science missions. Examples of priority issues receiving heightened attention are summarized below:

SCIENCE AND TECHNOLOGY

Global Change

USGS will continue building capability to understand and assist in the prediction of global change by planning the earth-science aspects of interdisciplinary and international studies of changing global environmental conditions, their causes, processes, and effects. USGS will continue to coordinate multi-agency plans in observations, data management, and research under the Global Change Research Program and will continue to provide specialized expertise in areas of earth-sciences processes, history of climate and ecological change, coastal processes, volcanic effects, and hydrologic consequences.

Water Quality

USGS research is oriented toward assisting decisionmakers at all levels of government in addressing environmental concerns and responding effectively. Emphasis addresses issues such as: national water quality assessment, water institutes and grants, irrigation drainage, toxic substances hydrology, the processes related to coastal erosion and wetlands loss, and acid rain.

Advanced Cartographic Systems

Relying in part on technology being developed by the Department of Defense, USGS will continue to develop the digital cartographic data base and production system. As the Nation's lead civilian mapping agency, USGS will continue to develop and implement a modern, fully automated cartographic system to improve production efficiency and respond to the growing needs of users and decisionmakers in Federal, State, and local governments, as well as the private sector, for digital data and updated base map information.

STEWARDSHIP

Mineral Land Assessments

New levels of endeavor have been directed toward the Exclusive Economic Zone, assessments of lands for the potential of strategic and critical minerals, and an intensified national geologic mapping program in cooperation with 33 States. USGS will continue cooperative endeavors with the Bureau of Mines to assure the accomplishment of earth-science research to better understand and assess the Nation's mineral and energy resources, provide information on new exploration targets, and respond rapidly in an energy or strategic and critical mineral emergency.

Environmental Hazards and Natural Disaster Reduction

USGS will continue research on environmental hazards to public safety to provide vital earth-science information for hazards mitigation planning, for emergency-preparedness decisions, and for predicting the nature, extent, and impact of these hazards in a timely manner. The Bureau will continue to provide leadership in the implementation of the International Decade of Natural Disaster Reduction.

PARTNERSHIP; RESPONSIBLE, EFFICIENT AND ETHICAL MANAGEMENT; EDUCATION

Geologic Mapping

The National Research Council and the Association of American State Geologists have endorsed expansion of the Cooperative Geologic Mapping Program (COGEOMAP). These projects are jointly funded by the States and the USGS to produce geologic maps in critical areas of mutual interest to both Federal and State governments, as well as to the private sector. In many cases, State interests are driven by Federal requirements, and mapping for environmental needs is one of the major program objectives.

Efficient and Ethical Management

Over the past several years, productivity and efficiency gains have been achieved through consolidation of laboratories and map distribution centers, workforce reductions through attrition, and completion of productivity improvement initiatives. Other cost savings measures and modernization efforts include automation of administrative systems such as personnel actions and vacancy announcement distribution, as well as the lead responsibility for developing and implementing the new departmentwide administrative accounting/payment system.

Outreach and Education Initiatives
The USGS Minority Participation in the Earth Sciences Program, the Historically Black Colleges and Universities Program, and other earth-science education outreach and volunteer initiatives will receive additional emphasis. USGS continues to provide leadership in the proper use and development of the full range of human resources (scientific, technical, administrative, and clerical) to assure equal employment opportunity, training, advancement and professional growth. In addition, we will work with Bureau of Mines and the Bureau of Reclamation as they build similar programs.

The Office of the Director reports to the Assistant Secretary--Water and Science, and is responsible for the overall direction and supervision of the Geological Survey. The Director is assisted in the exercise of these responsibilities by an immediate staff which consists of the Associate Director, Staff Assistants, and secretarial support. The Washington Liaison Office provides a base within the Nation's Capital for USGS senior staff to meet with counterparts in the Department of the Interior and other Federal Agencies, as well as with the public, on matters involving USGS expertise and program interests. The Office serves as a vital link for maintaining the necessary day-to-day relationships with the Department.

Administrative Support functions are provided nationwide from Headquarters by an Administrative Support Section. Essential support services for the Executive Direction Subactivity encompass: fiscal management, personnel services, general services and office support, procurement services, management analysis and improvement activities, and payment of Office of the Director costs for telecommunications, utilities, postage, computer usage, space and equipment rentals, and interdivision billings.

The Director's Senior Advisory Staff advises and consults with the Director on an extensive range of scientific, technical and administrative management issues, including the management of a Bureauwide Ethics Program. Provides scientific leadership and coordination for USGS research programs and projects; evaluates current and proposed research programs, determines needs for new areas of research, and advises on research program policies and priorities; advises on policy and program aspects of USGS effort to interpret, present, and disseminate research findings, scientific information, and data to the scientific community and to special audiences; makes recommendations on cooperative research projects with industry and industrial associates. Provides assistance to the Department of Energy on the characterization of the proposed site for disposal of radioactive wastes, on the licensing process for nuclear power plants and on the safety of other critical facilities; overviews the USGS Emergency Preparedness Plan; and monitors Bureau's environmental activities, including implementation of and compliance with the National Environmental Policy Act (NEPA), and geologic hazards warnings and preparedness. Extensive coordination is maintained through cooperative programs with State and local agencies, formal agreements and joint committees with other Federal agencies and foreign governments.

Global Change Research/Committee on Earth Sciences (CES). The 1991 USGS Global Change Research Program is focussed on six of the seven priority elements of the Governmentwide strategy prepared by the CES. Executive direction and oversight will be provided toward the expansion of ongoing USGS efforts to describe and understand: paleoclimates with emphasis on how current climatic variation correlates to past changes; interaction and sensitivity of hydrologic, ecological, and landscape systems with climate; arid, polar, and coastal regions and systems; volcano-atmosphere interaction; methane hydrates; changing land surface characteristics; social, environmental, and economic consequences of global change; and carbon cycle variation studies. A major emphasis is placed on archiving and distributing space and land-based earth-science data. In addition, the USGS is working with a number of other agencies to develop the national policy for the management of global change data both within the U.S. and internationally. The results of these research activities are important to help policymakers plan for potential changes in climate with respect to water resource availability and quality, national energy policy, air quality policy, and the mitigation of negative environmental and economic aspects.

The USGS-based staff of the White House Committee on Earth Sciences (CES) of the Federal Coordinating Council on Science, Engineering and Technology (FCCSET) maintains cooperative programs with the USGS and 11 other agencies to study global processes and environmental changes and provides oversight and evaluation of USGS programs in support of the CES.

Program Development and Budget staff provides leadership and coordination for the Bureau's program planning, budgeting, analysis and evaluation activities, as well as economic analyses of Bureau's programs to determine cost/benefits and trends within the Nation's socioeconomic structure, assuring that the results of analytic studies and other program evaluation efforts are reflected in the Bureau's program planning and development processes; a focal point for the coordination of Bureau goals, objectives, and programs through systematic multi-year program planning and budgeting; policy guidance and direction for the Bureau's program and budget formulation, presentation, advocacy, and budget execution, including coordination and development of financial plans, allocation of funds and tracking the status of funds and personnel resources; a point of contact for inquiries from the Department of the Interior (DOI), Office of Management and Budget (OMB), Congress, and others on these activities. Coordinates the Presidential, Secretarial, and Bureau's Management by Objectives System, A-123 Internal Control Systems, and other program-tracking systems; coordinates Geological Survey activities involving the General Accounting Office and the DOI's Office of the Inspector General; and coordinates OMB's Total Quality Management Program (Productivity Improvement), privatization activities, and the DOI's Productivity Enhancement Funding Program.

Congressional Liaison staff is responsible for liaison and close coordination among the Geological Survey and the Congress, the Department, and other bureaus for congressional matters. The Staff represents a central source of information for congressional inquiries and furnishes information materials and assistance to the Congress. The staff also provides coordination of the review of legislation and the preparation of testimony for the USGS.

Public Affairs staff is responsible for advising the Director and other Geological Survey officials on policies and procedures for disseminating information about USGS activities and products to the public, with an emphasis on enhanced outreach to the general public through the news media and special projects and events. The Public Affairs Office directs and operates the USGS program for providing information to news media. The staff prepares and distributes news releases to print and electronic media, prepares and reviews general-interest publications and audio-visual products, answers inquiries from news media and the public and coordinates a variety of other outreach efforts, including the USGS Yearbook, the Visitors Center program at the National Center, tours, open houses, and other special-event programs and activities. Staff maintains a 7-day, around-the-clock alert with technical divisions to provide information to the news media as quickly as possible about hazards and anomalous events such as earthquakes and floods.

Equal Employment Opportunity staff is responsible for developing, directing monitoring, and evaluating the Geological Survey Equal Employment Opportunity (EEO) Program in compliance with the EEO Act of 1972 (PL 92-261), the implementation of Section 504 of the Rehabilitation Act of 1973, Equal Employment Opportunity Commission related statutes and orders, and departmental directives. The Staff develops, implements, and evaluates the USGS Affirmative Employment Program (AEP) and is responsible for managing a complaints investigation system which includes EEO counseling for employees and applicants, and providing prompt, fair, and impartial consideration and disposition of complaints involving issues of discrimination on the basis of race, color, religion, sex, national origin, age, or mental or physical disabilities.

Minority Participation in the Earth Sciences. The Minority Participation in the Earth Sciences (MPES) Program was begun by the Geological Survey in 1971 in an endeavor to increase participation by members of minority groups in earth-science career fields. The effort has been subscribed to by professional societies, colleges and universities, and organizations representing various minority groups. Subsequently women and disadvantaged young people have been included in the Program. The current principal focus is to provide direct employment to members of the benefitting groups, primarily at the undergraduate and graduate levels, and to some extent at the upper high school level, to permit opportunities for work with scientists and engineers on real problems while the participants assess the potential for pursuit of careers in the earth sciences.

Secretarial Initiatives. The Department's drug-free workplace program was created to implement Executive Order 12564, Drug-Free Federal Workplace, establishing a policy against the use of illegal drugs by Federal employees, whether on duty or off duty. The USGS shares the costs of staff, training, applicant testing, accident followup testing, and necessary support items.

The Departmental Working Capital Fund (established on September 6, 1950, pursuant to 43 USC 1467) provides partial support for the Department's Centralized Administrative Services to cover expenses, such as centralized reproduction services, communication services, enforcement and security activities, space and facilities management, health services, training, and such other similar service functions as the Secretary determines may be performed more advantageously on a reimbursable basis. The remainder of the support for this fund is borne by USGS program activities.

Secretarial Initiatives. These special initiatives support the Department's mission and several of the Secretary's stewardship agenda items: Take Pride in America; Excellence in Education; Women and Minorities; and Volunteerism.

Increase for FY 1991	FY 1991 Base	FY 1991 Estimate	Change
$(000's)	4,904	6,583	1,679
FTE	72	72	--

Secretarial Initiatives. ($1,679,000)

1. Take Pride in America. The Department encourages volunteer stewardship in a variety of ways, including the national Take Pride in America campaign. Take Pride reaches out to millions of Americans through its national awards program, grassroots activities, and public service announcements. The campaign's message is simple: America's natural resources belong to all of us, and we have a responsibility to leave them in better condition for future generations. For the USGS a total of $79,000 is being proposed for Take Pride in America. The types of activities carried out by the USGS will be directed toward supporting all Departmental efforts.

2. Excellence in Education. Interior supports the President's goal of raising the standard of education in America. In addition to Indian education programs, the Department has a variety of non-Indian education initiatives that include activities in support of elementary, secondary and post-secondary school programs as well as programs for the general public regarding the Nation's natural resources. For the USGS a total of $500,000 is being proposed for the excellence in education effort. Through cooperative efforts with educational institutions and other interested organizations, the USGS would work to enhance education in the Earth Sciences. Emphasis would be placed on improving curricula and enhancing the knowledge and capabilities of teachers by providing training and cooperative research opportunities, developing teaching and demonstration materials, and by directly involving earth scientists in the educational process.

3. Women and Minorities. Interior's goal is to involve women and minorities as employees, especially at management levels, and program participants in an effort to reach beyond minimum equal opportunity requirements. Interior bureaus are continually seeking ways to enhance the recruitment, training, and advancement within the Department of women and minorities, particularly in such critical professional areas as engineering, science, accounting and computer programming. For the USGS a total of $700,000 is being proposed for the women and minorities effort. The types of activities carried out by the USGS include the following: Expansion of USGS support for equal opportunity efforts, including enhancing the Affirmative Employment Plan process, special emphasis programs, and activities of the HBCU Program, the MPES Program, and the Federal Equal Opportunity Recruitment Program (FEORP). Expansion of opportunities for teachers and students to have "hands on" experience in working with earth scientists. Development of cooperative research undertakings with minorities and women among college and university faculty. Special publications and

illustrations will be developed for use in precollege classes, meetings of professional societies, science fairs, and career days, to demonstrate the roles that women and minorities now play in the earth sciences and to encourage greater participation.

4. Volunteerism. Each day thousands of citizens volunteer their time, labor, and expertise on behalf of Department of the Interior programs. The Department and its bureaus encourage volunteer stewardship throughout the country. For the USGS a total of $400,000 is being proposed for the volunteerism effort. The USGS would expand support for increased use of volunteers for earth-science research, with special focus on teachers and students. Additional funds would be used primarily for incidental expenses of volunteers and expanded development and dissemination of information on volunteer opportunities with the USGS.

Funding Summary:	Amount
Take Pride in America	$ 79,000
Excellence in Education	500,000
Women and Minorities	700,000
Volunteerism	400,000
Total:	$1,679,000

Distribution of change by object class:

The object class detail for the proposed $1,679,000 increase is as follows:

	Amount
Personnel Compensation------------------	$ 150,000
Personnel Benefits----------------------	15,000
Travel and Transportation of Persons-----	310,000
Printing and Reproduction---------------	300,000
Other Services--------------------------	844,000
Supplies and Materials------------------	30,000
Equipment-------------------------------	30,000
Total-------------------------	$1,679,000

Justification of Program and Performance

Activity: General Administration
Subactivity: Administrative Operations

(Dollar amounts in thousands)

Program Elements		1990 Enacted to Date	1990 Adjusted Approp.	1991 Base	1991 Estimate	Inc.(+) Dec.(-) from Base
Administrative Direction and Coordination	$	3013	3001	3368	3368	0
	FTE-T	17		17	17	0
Financial Management	$	2693	2681	3007	3007	0
	FTE-T	69		69	69	0
Personnel Services	$	4773	4752	5330	5330	0
	FTE-T	119		119	118	-1
General Services and Office Support	$	5443	5419	6078	6078	0
	FTE-T	61		61	61	0
Procurement Activities	$	4910	4889	5484	5484	0
	FTE-T	100		100	100	0
Administrative Systems Management	$	7768	7700	8254	8254	0
	FTE-T	50		50	50	0
Total Requirements	$	28600	28442	31521	31521	0
	FTE-T	416		416	415	-1
Less Reimbursable Service Costs	$	6905	6905	7152	7152	0
	FTE-T	135		135	135	0
Less User Program Service Costs	$	10066	10066	12610	12610	0
	FTE-T	0		0	0	0
Total Appropriated Funds	$	11629	11471	11759	11759	0
	FTE-T	281		281	280	-1

Impact of Public Law 99-177	1990 Enacted to Date	PL 99-177 B.A. Cancellation	1990 Adjusted Approp.
Administrative Operations	11629	-158	11471

The $158,000 reduction to the Administrative Operations subactivity will result in reduced levels of travel for administrative evaluation programs such as Personnel Management Evaluations and Acquisition Management Reviews, as well as for site visits to assist and support field programmatic activities. Equipment replacement activities will also be curtailed.

Authorizations

31 U.S.C. 3501-3514	Budget Accounting and Procedures Act of 1950
31 U.S.C. 3901-3906	Prompt Payment Act
31 U.S.C. 3512	Federal Managers' Financial Integrity Act of 1982
41 U.S.C. 252	Competition in Contracting Act of 1984
2 U.S.C. 681-688	Congressional Budget and Impoundment Act of 1974, as amended
5 U.S.C. 305	Classification Act of 1949, Civil Service et seq. Retirement Act,Federal Employees' Compensation Act, Federal Employees' Health Benefits Act, Performance Rating Act of 1950, Civil Service Reform Act of 1978, etc.
5 U.S.C. 552	Freedom of Information Act
5 U.S.C. 552a	Privacy Act of 1974
29 U.S.C. 651	Occupational Safety and Health Act of 1970
40 U.S.C. 606	Public Buildings Act of 1959
40 U.S.C. 471	Federal Property and Administrative Services Act of 1949
41 U.S.C. 35-45	Walsh Healy Public Contracts Act
41 U.S.C. 351-357	Service Contract Act of 1965
41 U.S.C. 423	Office of Federal Procurement Policy Act
41 U.S.C. 601-613	Contract Disputes Act of 1978
42 U.S.C. 1006	Solid Waste Disposal Act of 1976 et seq.
42 U.S.C. 6905	Resource Conservation and Recovery Act of 1980
43 U.S.C. 31a	Survey's Organic Act of March 3, 1879
44 U.S.C. 35	Paperwork Reduction Act

Objective: The Administrative Operations activities provide administrative direction and coordination to the support service aspects of the scientific, research, and technical programs of the Geological Survey. This includes such essential functions as: financial management, personnel services, general services and office support, security, safety and occupational health, procurement activities, management analysis and improvement efforts, and administrative systems management. These functions are directed and carried out by Headquarters Offices and in the field through Regional Management Offices.

Base Program: The major components of Administrative Operations which follow are funded by direct appropriation and assessment to federal and non-federal reimbursements and Survey user programs.

Administrative Direction and Coordination

This function is performed by the Assistant Director for Administration (who acts as the Chief, Administrative Division), the immediate staff of the Assistant Director for Administration, and two Regional Management Officers (the Central Region Management Officer in Denver, and the Western Region Management Officer in Menlo Park) plus their immediate support staff. The Assistant Director for Administration, assisted by the subordinate Regional Management Officers, directs and coordinates the nationwide service functions provided by the Administrative Division.

Financial Management

The Office of Financial Management (OFM), centrally located at Reston, Virginia, is responsible for formulating, administering, and improving the accounting and financial activities of the Geological Survey. This program includes central coordination and control of the Department consolidated integrated finance system; control and implementation of cost, allotment and general ledger accounting; voucher and claims examination and processing; debt management and technical guidance to fiscal activities performed by other Geological Survey offices.

The Geological Survey was one of the first Bureaus within the Department to implement the new departmental accounting system, the Federal Financial System (FFS), at the beginning of FY 1989. During FY 1990, much of the effort of the Office of Financial Management will focus on continuing a program of operational improvements initiated with the implementation of the new accounting system. Examples of these ongoing activities include:

- Identifying the most efficient methods of processing transactions and obtaining data from the system by exploring accounting system features not implemented in the initial conversion.

- Exploring further cost-saving methods of payment processing, i.e., fast pay, vendor express, third party draft, and credit card payments.

- Refining reconciliation procedures to assure the validity of data processed in the FFS, and the accuracy of financial reports.

- Developing interfaces between the Geological Survey's National Mapping Division's product sales systems and the receivables and collection subsystem of the FFS.

- Pursuing expanded use of field entry of transactions deferred during the implementation year, in order to reduce paper flow, improve processing efficiency, improve responsiveness to vendors and customers, improve compliance with the Prompt Payment Act, or reduce overall processing costs.

In FY 1991, efforts to improve efficiency in processing and internal operations will continue to be emphasized. Activities will include:

- Maintaining a program aimed at reducing processing times for the monthly workload through more efficient use of the automated accounting system and improving document processing flows, and expanding the use of remote field office input as appropriate.

- Continuing reviews of alternative payment mechanisms to streamline administrative processing.

- Increasing efforts to analyze and interpret payment and other financial transaction data to identify abnormal trends and assist in management decisions through expanded use of microcomputer applications and training.

Personnel Services

The Headquarters Office of Personnel plans and develops personnel management policies, programs, and operating procedures which are implemented in the Headquarters and four field personnel offices. Provides advice and assistance to all levels of management in administering a modern personnel program including long-range planning, evaluation, and operational activities in: examining, recruitment and selection, placement, retention, classification, position management, pay administration, employee development, employee relations and services, labor relations, special interest groups, conflict of interest, motivation, discipline, performance evaluation, monetary and honor awards, benefits, and attendance and leave. Additional activities include production of a variety of essential personnel reports, records, statistics, and developing requirements for automated personnel systems to improve delivery of services in a more efficient, cost effective manner.

In FY 1991, it is anticipated that special efforts will be devoted to:

- Continued work in support of implementation of the Department of the Interior's Federal Personnel/Payroll System.

- Continued presentation of training courses on substance abuse awareness and the Ethics Provisions of the Federal Procurement Policy Act Amendments of 1989.

- Expanding employee assistance program (EAP) coverage to all employees on a nationwide basis and enhancing the bureau's ability to deal with problems in areas of growing concern such as eldercare, childcare, and other work and family issues.

- Continued expansion of the USGS's Volunteer for Science Program, including targeted outreach to the public.

- Continued development of bureau supplemental classification guides due to the Office of Personnel Management's (OPM's) focus on general classification guides/standards which do not cover critical bureau occupations. In FY 1990, supplementary classifications were implemented for Computer Science and Administrative Officer positions.

- Based upon the FY 1990 assessment of the bureau's personnel management indicators (compared to Governmentwide norms issued by the OPM), conduct of topical evaluations in identified problem areas to develop plans for improvement.

- Implementation of new recruitment initiatives developed by OPM relating to entry-level hiring for professional administrative positions and delegated case-examining authority in filling highly specialized scientific positions.

- Increased emphasis as a lead bureau in the development of special pay rate increase requests for OPM approval based on continuing recruitment and retention problems for selected scientific occupations.

General Services and Office Support

The Headquarters Office of Facilities and Management Services and two regional offices provide support, advice, direction, and formulate policies and procedures in the areas of space management, safety, security, supply, property management, directives, paperwork management, and other administrative and office services activities. Specialized operating areas include administration of a comprehensive and fully developed administrative services program for the acquisition, utilization, and disposition of personal and real property; maintenance of property accountability records; control of supplies and equipment; warehousing; administration of a bureauwide security program, including personnel and facility security, law enforcement, and emergency preparedness; maintenance of equipment, duplicating, and other program support services; administration of a bureauwide program of review, analysis, and implementation of directives and paperwork management improvements; development of policy guidance, coordination, and review of information for space management and acquisition at the field level; review and analysis of major organizational change proposals; transportation; and mail and messenger service.

Special attention will be directed to the following areas:

- Space Management: FY 1991 space management efforts will focus on facility upgrades at the Rocky Mountain Mapping Center at Denver, Colorado, and the Mid-Continent Mapping Center at Rolla, Missouri, to accommodate expanding and changing operations pursuant to the National Mapping Division's Advanced Cartographic System. These upgrades are being pursued through the General Services Administration, as are actions to replace leased space and inadequate temporary structures at the Geological Survey Western Region Headquarters at Menlo Park, California.

- **Property Management**: Primary effort will focus on improved efficiencies in personal property management operating procedures, particularly implementation of much-needed improvements in the structure of property accountability, and streamlining and enhancing the excess property disposal process. Internal controls will continue to be strengthened and monitored through increased emphasis on nationwide outreach, service, and training in the form of assistance visits by both Headquarters and the regional property staff. Efforts will continue toward improving and enhancing the capabilities and effectiveness of the automated property system. Bureau personal property management policies, programs, and procedures will continue to be reviewed, refined, and revised, in conformance with newly established departmental guidelines.

Procurement Activities

The Headquarters Office of Procurement and Contracts and two regional procurement offices administer the Geological Survey's procurement, contracts, grants, and cooperative agreement support activities. This support is essential to the effective accomplishment of the scientific, research, and technical projects and programs required to fulfill the mission of the bureau. This involves the procurement of a wide range of complex, often unique research support services and associated equipment and administrative support for three formal external domestic assistance programs and a variety of individual assistance awards. These activities encompass the entire spectrum of procurement and assistance policy and operations functions. They are designed to ensure the formulation and implementation of contract, grant, cooperative agreement, and purchasing practices and procedures that will produce effective, timely and economical project results and achievement of authorized support and stimulation purposes, in compliance with applicable laws, regulations, and sound business decisions.

In FY 1991 priority areas will include revision of procurement policy; automation; support for small business competitiveness, procurement integrity, and OMB Circular A-76 contracting programs; and training administrative and technical personnel in contractual requirements and techniques.

- The Federal Acquisition Regulation (FAR) continuously undergoes rapid changes in response to legislation (such as Public Law 98-369, the Competition in Contracting Act) and internal initiatives. FAR refinement will continue into FY 1991, and some additional training of procurement personnel will be required. Procurement policies will continue to be reviewed and changed as appropriate, to conform with the new regulations.

- Automation initiatives will be continued to streamline the procurement process. Two major automated systems, the Procurement Management Information System (PMIS) and an automated solicitation and contract preparation system, will both require continued maintenance and enhancements during FY 1991. Scheduled for FY 1990 is an initiative to automate procurement and grant forms and grant reporting which will require additional refinement in FY 1991. The Department of the Interior is currently examining standardization of procurement systems. It is anticipated that this effort will result in initiatives to be implemented during FY 1991. FY 1991 efforts will also be directed toward meeting the procurement automation needs of the Geological Survey within the guidelines provided by the Department of the Interior.

- P.L. 101-37 included the Department of the Interior in the Small Business Competitiveness Demonstration Program. This complex three-year program, which was implemented during FY 1990, tests the ability of small businesses to achieve goals without set-asides and creates new set-aside programs for emerging small businesses; the program will require additional certifications, increased reporting, and extensive training through all levels of contracting, including small purchases.

- Continued attention will be directed to meeting and maintaining Warrant System (procurement training) qualification standards in FY 1991. Under the provisions of the Warrant System, the Geological Survey continues to foster a highly skilled, fully qualified, professional procurement staff.

- A pilot program of the bankcard system of purchasing was implemented during the final quarter of FY 1989. Bureau-wide expansion is anticipated in FY 1990. Review and evaluation of the program is scheduled for FY 1991 to assess improvements in cash management, automatically generated purchase records, regulatory compliance and vendor acceptance.

- The Department of the Interior expects to complete a revised inventory of commercial activities under OMB Circular A-76 during FY 1990. We anticipate providing contracting support for any required A-76 cost comparison studies in FY 1991.

Administrative Systems Management

Functional responsibilities in the area of administrative systems management include: the development of policy, standards, and procedures for administrative information systems and their associated data bases; automated data processing (ADP) planning and performance monitoring; and, review and approval of all proposals for establishing, modifying, or accessing administrative systems hardware and software components. Developmental activities include requirements definition, systems analysis and design, programming, systems implementation, training, maintenance, and production support of automated systems in administrative processing areas such as personnel, procurement, property, space management, accounting and financial reporting.

Automation efforts within the Geological Survey's administrative activities are focused on four strategic goals: administrative ADP systems should be accessible, data flows should replace paper flows wherever possible, administrative procedures should be streamlined and standardized, and a high level of integration should exist among administrative systems. During FY 1991 continuing efforts will be applied to developing administrative systems planning process improvements, from the strategic level down to the design of specific ADP applications, consistent with the Department's Information Resources Management Strategic Framework.

The Geological Survey was the first bureau to implement the new departmentwide financial management system. In FY 1991, the financial management system may be enhanced by the addition of ancillary functions such as procurement, property, and budget formulation. Also in the period FY 1990-91, the Geological Survey will be actively involved in the requirements analysis and specifications development for the new payroll/personnel system being developed by the Bureau of Reclamation for use departmentwide.

Administrative Service Center: As designated by the Department of the Interior, the Geological Survey hosts an Administrative Service Center (ASC) to provide ADP services to all bureaus of the DOI and, as negotiated, to other federal agencies. The Geological Survey ASC is responsible for the phased departmentwide implementation and subsequent maintenance for all DOI bureaus of a single financial management system--the Federal Financial System (FFS). In addition to overseeing software modifications and ensuring that revisions in accounting requirements are accommodated by FFS in a systematic manner, the ASC has a role in promoting efficiency in operation of the system in order to reduce overall costs to the Government. In FY 1990, the ASC will furnish ongoing technical and operational system management support to bureaus already operational on FFS, i.e., the Geological Survey and the Bureau of Reclamation. Consistent with Geological Survey's role as lead bureau for implementation of the FFS, the ASC will also accomplish implementation of FFS at the Bureau of Mines and the Fish and Wildlife Service through activities that include technical analysis, project management, contract management, operations support, training, and system assurance. Concurrently, the ASC will focus on the development of standard interfaces to other major systems such as the departmental payroll system under development by the Bureau of Reclamation, and on the development of significant enhancements such as a microcomputer-based data entry capability.

Building on accomplishments during FY 1990, the Geological Survey ASC will continue implementation of FFS in the remaining DOI bureaus as needed in FY 1991-92. Also in FY 1991, the ASC will continue to provide technical analysis, training, and contract management support as well as continuing to provide for quality assurance and controls that ensure the integrity of departmental financial data. The ASC plans to have the departmental financial management software modified to operate under a data base management environment, which would enhance the efficiency of operations. In addition, the ASC will oversee the implementation of a budget formulation module, develop additional standard interfaces, and expand the distributed processing capabilities of FFS.

ADMINISTRATIVE OPERATIONS
PROGRAM OUTPUTS

Selected program outputs are:

	FY 1989 Actual	FY 1990 Adjusted Approp	FY 1991 Base	FY 1991 Estimate
Travel Voucher Line Entries	111,104	122,200	128,300	128,300
Payment Voucher Line Entries	263,089	289,400	303,900	303,900
Obligation Line Entries	67,678	74,400	78,100	78,100
Travel Advance Line Entries	19,148	21,000	22,200	22,200
Cash Receipts Line Entries	21,621	23,800	25,000	25,000
Other Document Line Entries	66,023	72,600	76,200	76,200
Employee Relations Case Work	26,000	26,000	26,000	26,000
Number of Positions Reviewed	3,500	3,500	3,500	3,500
Labor Relations Case Work	65	65	65	65
Vacancy Announcements Processed	1,245	1,200	1,200	1,200
Personnel Management Evaluations	9	10	10	10
Personnel Transactions Processed	63,732	64,000	64,000	64,000
Procurements Processed	17,800	19,000	19,000	19,000
Procurement Management System Inputs	100,000	100,000	110,000	110,000
Property Management System Items	123,000	128,000	132,000	132,000
Property Management System Inputs	77,000	80,000	80,000	80,000

Justification of Program and Performance

Activity: General Administration
Subactivity: Reimbursements to the Department of Labor

(Dollar amounts in thousands)

Program Elements		1990 Enacted to Date	1990 Adjusted Approp.	1991 Base	1991 Estimate	Inc.(+) Dec.(-) from Base
Reimbursements to the Department of Labor	$	1935	1909	2546	2546	0
Total Requirements	$	1935	1909	2546	2546	0

Impact of Public Law 99-177

	1990 Enacted to Date	PL 99-177 B.A. Cancellation	1990 Adjusted Approp.
Reimbursements to the Department of Labor	1935	-26	1909

Payments under this subactivity are non-discretionary reimbursements to the Department of Labor for State unemployment and job-related injury benefit payments. The reduction of $26,000 will be absorbed by program activities.

Authorization

5 U.S.C. 8101	Federal Employees Compensation Act Amendment of 1960
5 U.S.C. 8509	Omnibus Reconciliation Act of 1980

Objective: This subactivity funds (1) the estimated reimbursement to the Bureau of Employee Compensation, Department of Labor, for payments made for Geological Survey employees injured since December 1, 1970, and 2) reimbursement to the Department of Labor for funds transferred to State governments for unemployment benefits paid to eligible individuals whose last job of record was with the Geological Survey. If actual charges for unemployment exceed the FY 1991 estimates, the expenses will be borne by program activities, or charged to appropriate prior year funds, as available.

U.S. GEOLOGICAL SURVEY
Analysis by Subactivity

Activity: **Facilities**

(Dollars amounts in thousands)

Subactivity	1989 Actual	1990 Approp. Enacted	1990 Adjusted Approp.	1991 Base	1991 Estimate	Inc. (+) Dec. (-) from Base
National Center-Rental payments to GSA	14524	14810	14610	15452	15452	0
National Center-Facilities Management	2897	2903	2864	2930	2930	0
TOTAL	17421	17713	17474	18382	18382	0

Justification of Program and Performance

Activity: Facilities

(Dollar amounts in thousands)

Program Elements		1990 Enacted to Date	1990 Adjusted Approp.	1991 Base	1991 Estimate	Inc.(+) Dec.(-) from Base
National Center - Rental payments to GSA	$	14810	14610	15452	15452	0
Facilities Management	$	2903	2864	2930	2930	0
	FTE-T	29		29	29	0
Total Requirements	$	17713	17474	18382	18382	0
	FTE-T	29		29	29	0

Impact of Public Law 99-177

	1990 Enacted to Date	PL 99-177 B.A. Cancellation	1990 Adjusted Approp.
Facilities	17713	-239	17474

The reduction of $239,000 is comprised of $200,000 in the National Center Rental Payments to GSA subactivity, and $39,000 for the National Center Facilities Management subactivity. The reduction of $200,000 in GSA Rent funding will be absorbed by program activities, since Rent payments are non-discretionary. The reduction of $39,000 in the Facilities Management subactivity will result in the postponement of minor facility alterations and improvements at the National Center.

Authorization

40 U.S.C. 601 Public Buildings Amendment Act of 1972

Objective: To serve as the primary policy focal point in the Geological Survey for facilities management; to provide adequate and safe work space and facilities that will contribute to the productivity and efficiency of the bureau and its employees in meeting the current and future goals and objectives of the Survey's mission; to maintain short- and long-range programs to abate unsafe and unhealthy working conditions, correct deterioration, malfunction and obsolescence in facilities; and provide special support services for the National Center complex at Reston, Virginia, and major field centers.

Base Program:

National Center Support

Finance space costs at the National Center complex which include:

- $15,452,000 for GSA's Rent cost for the normal 40-hour, 5-day work week. In the event GSA Rent costs exceed available funds, they would be borne by program activities based on their use of National Center space.
- Support services for the Geological Survey program operations with approximately 2,600 employees located in the Reston, Virginia, complex. Such services include: mail and transportation operations, property management, space assignment and control, systems furniture installations, parking, operation of self-service store, duplicating and printing services, self-protection, safety, and selected supply and warehousing operations.
- Special building operating costs for the National Center, not included in Rent, such as guard services, overtime utilities, and alterations. In the event these costs exceed available funds, they will be borne by the program activities generating the expense.

Summary of Requirements by Object Class

(Dollar amounts in thousands)

Appropriation: Surveys, Investigations, and Research

Direct Obligations:	FY 1991 Base FTE/T	FY 1991 Base Amount	FY 1991 Estimate FTE/T	FY 1991 Estimate Amount	Inc. or Dec. (-) FTE/T	Inc. or Dec. (-) Amount
11.0 Personnel Compensation:						
11.1 Full-time permanent		234687		237240		2553
11.3 Other than full-time perm.		19740		19740		0
11.5 Other personnel comp.		4369		4369		0
11.8 Special personal serv. payments		416		416		0
Total pers. comp.	7318	259212	7343	261765	25	2553
12.1 Personnel benefits		46322		46735		413
13.0 Benefits for former pers.		357		357		0
21.0 Travel & trans of persons		13995		14133		138
22.0 Transportation of things		3943		4520		577
23.1 Rental payments to GSA		39979		39979		0
23.2 Rental payments to others		1653		1653		0
23.3 Comm., Util. & misc. charges		12690		12937		247
24.0 Printing and Reproduction		3047		3128		81
25.0 Other services		66800		69890		3090
26.0 Supplies & materials		16913		17160		247
31.0 Equipment		4919		19459		14540
32.0 Lands and structures		240		240		0
41.0 Grants, subsidies, and contrib.		19523		14577		-4946
42.0 Insurance claims & indemnities		45		45		0
Total requirements		489638		506578		16940

Summary of Requirements by Object Class

(Dollar amounts in thousands)

Appropriation: Surveys, Investigations, and Research

Reimbursable Obligations:	FY 1991 Base FTE/T	FY 1991 Base Amount	FY 1991 Estimate FTE/T	FY 1991 Estimate Amount	Inc. or Dec.(-) FTE/T	Inc. or Dec.(-) Amount
11.0 Personnel Compensation:						
11.1 Full-time permanent		73822		75815		1993
11.3 Other than full-time perm.		6470		6645		175
11.5 Other personnel comp.		1365		1401		36
11.8 Special personal serv. payments		132		132		0
Total pers. comp.	2351	81789	2349	83993	-2	2204
12.1 Personnel benefits		14452		14613		161
21.0 Travel & trans of persons		9336		8856		-480
22.0 Transportation of things		3141		2979		-162
23.1 Rental payments to GSA		11307		12003		696
23.2 Rental payments to others		1085		1096		11
23.3 Comm., Util. & misc. charges		8974		8514		-460
24.0 Printing and Reproduction		2530		2400		-130
25.0 Other services		47628		45184		-2444
26.0 Supplies & materials		14150		13424		-726
31.0 Equipment		16099		15273		-826
32.0 Lands and structures		151		144		-7
41.0 Grants, subsidies, and contrib.		2271		2155		-116
42.0 Insurance claims & indemnities		31		29		-2
Total requirements		212944		210663		-2281

Type size:
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Case 210

STANDARD FORM 300
July 1964, Bureau of the Budget
Circular No. A 11. Revised.
300-101

A-11-32A

DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
SURVEYS, INVESTIGATIONS, AND RESEARCH
Program and Financing (in thousands of dollars)

Identification code 14-0804-0-1-306	1989 actual	1990 estimate	1991 estimate
Program by activities:			
Direct program:			
00.01 National mapping, geography, and surveys	94,107	111,505	126,771
00.02 Geologic and mineral resource surveys and mapping	178,002	193,221	184,821
00.03 Water resources investigations	144,892	149,875	155,716
00.04 General administration	16,330	18,081	20,888
00.05 Facilities	17,459	18,040	18,843
Total direct program	450,790	490,722	507,039
Reimbursable program a/	218,909	212,944	210,663
10.00 Total obligations	669,699	703,666	717,702
Financing:			
Offsetting collections from:			
11.00 Federal funds	-135,138	-131,084	-132,255
14.00 Non-Federal sources	-83,771	-81,860	-78,408
21.40 Unobligated balance available, start of year	-2,592	-3,556	-2,184
24.40 Unobligated balance available, end of year	3,556	2,184	1,973
25.00 Unobligated balance lapsing	2	..	..
27.00 Reduction pursuant to P.L. 99-177	...	1,056	..
39.00 **Budget authority**	451,756	490,406	506,828

a/ Includes map receipts of $8.0M in FY 1989, $8.0M in FY 1990 and $8.0M in FY 1991

Type size:
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Case 180
Red Underscore
Case 210

STANDARD FORM 300
July 1964, Bureau of the Budget
Circular No. A-11 Revised
300-101

A-11-32A

DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
SURVEYS, INVESTIGATIONS, AND RESEARCH
Program and Financing (in thousands of dollars)

Identification code 14-0804-0-1-306		1989 actual	1990 estimate	1991 estimate
	Budget authority:			
	Current:			
40.00	Appropriation	451,506	484,709	506,578
40.00	Reduction pursuant to P.L. 99-177	--	-6,553	--
42.00	Transferred from other accounts	--	12,000	--
43.00	Appropriation (adjusted)	451,506	490,156	506,578
	Permanent:			
60.00	Appropriation (indefinite)	250	250	250
	Relation of obligations to outlays:			
71.00	Obligations incurred, net	450,790	490,722	507,039
72.40	Obligated balance, start of year	29,928	1,557	24,508
74.40	Obligated balance, end of year	-1,557	-24,508	-25,329
77.00	Adjustments in expired accounts	4,135	--	--
90.00	Outlays	483,295	467,771	506,218

Note: May not add due to rounding.

Type size:
8 point 22 picas
Case 180
Red Underscore
Case 310

STANDARD FORM 300
July 1964, Bureau of the Budget
Circular No. A 11. Revised.
300-101

A-11-35A

DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
SURVEYS, INVESTIGATIONS, AND RESEARCH
DIRECT PROGRAM
OBJECT CLASSIFICATION (in thousands of dollars)

Identification code 14-0804-0-1-306		1989 actual	1990 estimate	1991 estimate
	Direct obligations:			
	Personnel compensation:			
11.1	Full-time permanent	225,597	231,311	237,240
11.3	Other than full-time permanent	18,797	19,266	19,740
11.5	Other personnel compensation	4,163	4,266	4,369
11.8	Special personal services payment	416	416	416
11.9	Total personnel compensation	248,973	255,259	261,765
12.1	Civilian personnel benefits	43,934	45,104	46,735
13.0	Benefits for former personnel	357	357	357
21.0	Travel and transportation of persons	10,452	12,957	14,133
22.0	Transportation of things	3,343	4,144	4,520
23.1	Rental payments to GSA	36,108	37,664	39,979
23.2	Rental payments to others	1,422	1,635	1,653
23.3	Comm., util., and misc. charges	9,567	11,861	12,937
24.0	Printing and reproduction	2,313	2,868	3,128
25.0	Other services	48,306	61,152	70,351
26.0	Supplies and materials	12,032	14,916	17,160
31.0	Equipment	13,643	16,914	19,459
32.0	Land and structures	177	220	240
41.0	Grants, subsidies, and contributions	20,130	25,630	14,577
42.0	Insurance claims and indemnities	33	41	45
	Total direct obligations	450,790	490,722	507,039

Type size:
8 point 22 picas
Case 180
Red Underscore
Case 210

STANDARD FORM 300
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300-101

A-11-35A

DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
SURVEYS, INVESTIGATIONS, AND RESEARCH
REIMBURSABLE PROGRAM
OBJECT CLASSIFICATION (in thousands of dollars)

Identification code 14-0804-0-1-306		1989 actual	1990 estimate	1991 estimate
	Reimbursable obligations:			
	Personnel compensation:			
11.1	Full-time permanent	71,881	73,822	75,815
11.3	Other than full-time permanent	5,989	6,470	6,645
11.5	Other personnel compensation	1,327	1,365	1,401
11.8	Special personal services payments	132	132	132
11.9	Total personnel compensation	79,329	81,789	83,993
12.1	Civilian personnel benefits	13,998	14,452	14,613
21.0	Travel and transportation of persons	10,184	9,336	8,856
22.0	Transportation of things	3,426	3,141	2,979
23.1	Rental payments to GSA	10,841	11,307	12,003
23.2	Rental payments to others	950	1,085	1,096
23.3	Comm., util., and misc. charges	9,790	8,974	8,514
24.0	Printing and reproduction	2,760	2,530	2,400
25.0	Other services	51,956	47,628	45,184
26.0	Supplies and materials	15,436	14,150	13,424
31.0	Equipment	17,562	16,099	15,273
32.0	Land and structures	165	151	144
41.0	Grants, subsidies, and contributions	2,478	2,271	2,155
42.0	Insurance claims and indemnities	34	31	29
	Total reimbursable obligations	218,909	212,944	210,663
99.0	Total obligations, Surveys, Investigations, & Research	669,699	703,666	717,702

DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
SURVEYS, INVESTIGATIONS, AND RESEARCH
PERSONNEL SUMMARY

14-0804-0-1-306	1989 Actual	1990 Estimate	1991 Estimate
Direct:			
Total number of full-time permanent positions	6,402	6,391	6,380
Total compensable workyears:			
Full-time equivalent employment	7,366	7,354	7,343
Full-time equivalent of overtime and holiday hours	72	72	72
Average ES Salary	$75,041	$79,021	$96,237
Average GS Grade	10.15	10.15	10.15
Average GS Salary	$33,997	$35,220	$36,452
Reimbursable:			
Total number of full-time permanent positions	2,040	2,043	2,041
Total compensable workyears:			
Full-time equivalent employment	2,347	2,351	2,349
Full-time equivalent of overtime and holiday hours	22	22	22
Average GS Grade	10.15	10.15	10.15
Average GS Salary	$33,997	$35,220	$36,452

Appropriation Summary Statement

Appropriation: Exploration of National Petroleum Reserve in Alaska

The National Petroleum Reserve in Alaska program for the exploration of the Reserve has been completed and demobilization has occurred. Closeout activities relating to accounting and contract audits were completed in 1989 for the $914.5 million program which began in 1974. The results and a major compendium have been published.

Remaining closeout activities will be continuing monitoring of selected drilling sites in FY 1989, FY 1990, and FY 1991, as a condition of Bureau of Land Management assuming responsibility for the land. These activities will be funded from available prior year balances in the Surveys, Investigations and Research (SIR) account. The use of the SIR account was authorized by permanent language in P.L. 100-446 Department of the Interior and Related Agencies Appropriations Act, 1989.

Type size:
8 point 22 picas
Case 180
Red Underscore
Case 210

STANDARD FORM 300
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300-101

A-11-32A

DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
EXPLORATION OF NATIONAL PETROLEUM RESERVE IN ALASKA
Program and Financing (in thousands of dollars)

Identification code 14-0805-0-1-271	1989 actual	1990 estimate	1991 estimate
Program by activities:			
00.01 Evaluation and assessment of National Petroleum Reserve in Alaska	71	--	--
10.00 Total obligations	71	--	--
Financing:			
21.40 Unobligated balance available, start of year	-71	--	--
39.00 **Budget authority**	--	--	--
Relation of obligations to outlay			
71.00 Obligations, incurred, net	71	--	--
72.40 Obligated balance, start of year	292	--	--
90.00 **Outlays**	362	--	--

Note: May not add due to rounding

Type size
8 point 22 picas
Case 180
Red Underscore
Case 210

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300-101

A-11-35A

DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
EXPLORATION OF NATIONAL PETROLEUM RESERVE IN ALASKA
OBJECT CLASSIFICATION (in thousands of dollars)

Identification code 14-0805-0-1-271		1989	1990	1991
21.0	Travel and transportation of persons	5	--	--
22.0	Transportation of things	5	--	--
23.1	Rental payments to GSA	13		
23.2	Rental payments to others	2		
24.0	Printing and reproduction	19		--
25.0	Other services	27		--
99.0	Total obligations	71		--

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Appropriation Summary Statement

Appropriation: Contributed Funds

Funds in this account, which was established in FY 1983, are provided by States, local governments, and private organizations. This appropriation, a permanent, indefinite, trust fund appropriation, makes these funds available to the Bureau to perform the work desired by the contributor and the Bureau. Research and development, information collection and analysis, and other technical activities and services are undertaken when such activities are of mutual interest and benefit and assist the Bureau in accomplishing its mandated purposes.

Type size:
8 point 22 picas
Case 180
Red Underscore
Case 210

STANDARD FORM 300
July 1964, Bureau of the Budget
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380-101

A-11-32A

DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CONTRIBUTED FUNDS

Program and Financing (in thousands of dollars)

Identification code 14-8562-0-7-306	1989 actual	1990 estimate	1990 estimate
Program by activities:			
10.00 Total obligations (object class 25.0)	130	9	--
Financing:			
21.40 Unobligated balance available, start of year	-1	-9	--
24.40 Unobligated balance available, end of year	9	--	--
60.00 **Budget authority** (appropriation) (permanent, indefinite)	140	--	--
Relation of obligations to outlays:			
71.00 Obligations incurred, net	130	9	--
72.40 Obligated balance, start of year	20	3	--
74.40 Obligated balance, end of year	-3	--	--
90.00 Outlays	149	12	--

Note: May not add due to rounding.

Appropriation Summary Statement

Appropriation: Operation and Maintenance of Quarters

The Geological Survey has 15 quarters located at geomagnetic or seismic observatories. The operation and maintenance of these quarters, in the past, have been funded out of rental receipts which were credited to the Survey's annual SIR account. Under the provisions of Public Law 98-473, this account was established to receive rental receipts to remain available until expended for operation and maintenance of these quarters.

Type size
8 point 22 picas
Case 190
Red Underscore
Case 210

STANDARD FORM 300
July 1964, Bureau of the Budget
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300-101

A-11-32A

DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
OPERATION AND MAINTENANCE OF QUARTERS
Program and Financing (in thousands of dollars)

Identification code 14-5055-0-2-306	1989 actual	1990 estimate	1991 estimate
Program by activities:			
10.00 Total obligations	40	55	55
Financing:			
21.40 Unobligated balance available, start of year	-13	-31	-31
24.40 Unobligated balance available, end of year	31	31	31
60.00 **Budget authority** (appropriation) (permanent, indefinite)	58	55	55
Relation of obligations to outlay			
71.00 Obligations, incurred, net	40	55	55
72.40 Obligated balance, start of year	38	10	10
74.40 Obligated balance, end of year	-10	-10	-10
90.00 **Outlays**	68	55	55

Type size:
8 point 22 picas
Case 180
Red Underscore
Case 210

STANDARD FORM 300
July 1964, Bureau of the Budget
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300-101

A-11-35A

DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
OPERATION AND MAINTENANCE OF QUARTERS
OBJECT CLASSIFICATION (in thousands of dollars)

Identification code 14-5055-0-2-306		1989 actual	1990 estimate	1991 estimate
25.0	Other services	23	32	32
26.0	Supplies and materials	12	15	15
31.0	Equipment	- -	2	2
32.0	Lands and structures	5	6	6
99.0	Total obligations	40	55	55

Funding of Geological Survey Programs (Obligations)

	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate
National Mapping, Geography and Surveys:			
Direct appropriation	94,233,858	111,505,000	126,771,000
Map Receipts-Non-Federal Sources	7,953,071	8,000,000	8,000,000
States, counties, and municipalities-			
Matched	1,517,073	2,700,000	2,700,000
Unmatched	3,301	100,000	100,000
Sale of Photos, Reprod. & Digital Products - non-Federal	2,532,000	2,500,000	2,500,000
Miscellaneous non-Federal sources	319,000	200,000	200,000
Agency for International Development	2,350,000	2,800,000	2,800,000
Bureau of Indian Affairs	71,141	0	0
Bureau of Land Management	459,823	450,000	450,000
Department of Agriculture	2,943,500	3,000,000	3,000,000
Department of Commerce	0	550,000	200,000
Department of Defense:			
Military	5,116,743	5,500,000	5,500,000
Civilian	16,656	15,000	15,000
Fish and Wildlife	54,410	50,000	50,000
National Oceanic & Atmospheric Admin.	4,171,000	1,820,000	1,820,000
National Park Service	157,733	50,000	50,000
National Science Foundation	403,985	350,000	350,000
Training and Special Projects	70,000	40,000	40,000
Sale of Maps, Photos, Reproduction & Digital - Federal	1,540,755	1,600,000	1,700,000
Landsat Affiliates (EOSAT)	2,070,000	1,750,000	1,500,000
Miscellaneous Federal Agencies	472,133	700,000	700,000
Total	126,456,182	143,680,000	158,446,000
Geologic and Mineral Resource Surveys and Mapping:			
Direct appropriation	178,198,800	181,221,000	184,821,000
No Year Appropriation	0	12,000,000	0
States, counties and municipalities:			
Matched	809,000	824,000	824,000
Unmatched	151,840	75,000	75,000
Miscellaneous non-Federal sources	682,110	1,370,000	745,000
Agency for Int'l Development	1,719,167	910,000	500,000
Bureau of Indian Affairs	646,073	11,000	11,000
Bureau of Land Management	375,324	108,000	108,000
Bureau of Reclamation	363,336	287,000	287,000
Department of Agriculture	23,799	0	0
Department of Defense:			
Military	5,054,888	4,382,000	3,382,000
Civilian	269,571	150,000	150,000
Department of Energy	10,907,474	9,697,000	9,697,000
Department of State (Saudi Arabia)	5,058,948	6,000,000	4,000,000
Department of State (Foreign)	2,702,225	0	0
Department of State (Not Foreign)	418,741	0	0
Environmental Protection Agency	158,108	734,000	734,000

Funding of Geological Survey Programs (Obligations)

	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate
Federal Emergency Management Agency	38,777	50,000	50,000
Minerals Management Service	192,663	101,000	101,000
National Aeronautics and Space Admin.	4,916,099	5,117,000	5,115,000
National Bureau of Standards	33,102	40,000	40,000
National Oceanic & Atmospheric Admin.	126,489	144,000	144,000
National Park Service	306,658	253,000	242,000
National Science Foundation	226,002	702,000	502,000
Nuclear Regulatory Commission	1,796,948	1,575,000	1,575,000
Miscellaneous Federal Agencies	575,933	624,000	635,000
Total	215,752,075	226,375,000	213,738,000
Water Resources Investigations			
Direct appropriation	145,320,783	149,875,000	155,716,000
Prior year's unobligated balance	313,637	0	0
States, counties, and municipalities:			
Matched	58,900,000	58,974,000	56,147,000
Unmatched	8,195,460	4,500,000	4,500,000
Permittees and licensees of the Federal Energy Regulatory Comm.	2,441,601	2,400,000	2,400,000
Miscellaneous non-Federal sources	258,351	200,000	200,000
Agency for Int'l Development	10,735	55,000	55,000
Bonneville Power Administration	311,356	300,000	300,000
Bureau of Indian Affairs	1,472,490	900,000	900,000
Bureau of Land Management	481,846	500,000	500,000
Bureau of Reclamation	5,562,536	4,500,000	4,000,000
Department of Agriculture	694,588	500,000	500,000
Department of Defense:			
Military	11,008,588	13,000,000	14,000,000
Civilian	19,011,490	19,000,000	19,000,000
Department of Energy	20,722,889	21,500,000	23,000,000
Department of State (Allocation)	494,000	556,000	609,000
Department of State (Foreign)	1,647,209	2,500,000	3,000,000
Department of State	255,149	150,000	150,000
Department of Transportation	1,478,632	1,132,000	1,132,000
Environmental Protection Agency	2,937,426	2,700,000	2,700,000
Federal Emergency Management Agency	747,880	1,000,000	1,000,000
Fish and Wildlife	594,088	500,000	500,000
National Aeronautics and Space Admin.	36,000	84,000	84,000
National Oceanic & Atmospheric Admin.	1,029,220	1,188,000	1,188,000
National Park Service	839,520	860,000	860,000
National Science Foundation	34,074	20,000	20,000
Office of Surface Mining	263,570	275,000	275,000
Office of the Secretary	2,206,210	1,700,000	1,700,000
Tennessee Valley Authority	169,628	295,000	270,000
Miscellaneous Federal Agencies	209,342	500,000	500,000
Total	287,648,298	289,664,000	295,206,000

Funding of Geological Survey Programs (Obligations)

	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate
General Administration:			
Direct appropriation	16,330,000	18,081,000	20,888,000
Miscellaneous Non-Federal sources	1,000	1,000	1,000
Miscellaneous Federal Agencies	2,727,765	3,032,000	5,840,000
Total	19,058,765	21,114,000	26,729,000
Facilities:			
Direct appropriation	17,420,523	17,474,000	18,382,000
General Services Admin. (Allocation)	4,973,676	6,146,000	6,052,000
Minerals Management Service	29,000	0	0
Total	22,423,199	23,620,000	24,434,000
Computer Services			
Miscellaneous non-Federal sources	6,796	16,000	16,000
Miscellaneous Federal Agencies	4,814,217	5,313,000	5,313,000
Administrative Services			
Miscellaneous Federal Agencies	34,790	20,000	20,000
Total	4,855,803	5,349,000	5,349,000
Summary:			
Surveys, Investigations, & Research:			
Direct appropriation:			
Current	451,503,964	478,156,000	506,578,000
No Year	0	12,000,000	0
Prior year's unobligated balance	313,637	0	0
States, counties and municipalities	69,576,674	67,173,000	64,346,000
Other Non-Federal sources	6,240,858	6,687,000	6,062,000
Map Receipts-Non-Federal Sources	7,953,071	8,000,000	8,000,000
Other Federal agencies	140,606,118	137,786,000	138,916,000
Total - SIR	676,194,322	709,802,000	723,902,000
Contributed Funds:			
Permanent, indefinite appropriation	130,203	9,223	0
Operation and Maintenance of Quarters:			
Permanent, indefinite appropriation	38,110	55,000	55,000
Telecommunications Amortization Fund:			
Permanent, indefinite appropriation	37,932	566,000	461,000
National Petroleum Reserve in Alaska:			
Direct appropriation:			
Prior year's	70,705	0	0
TOTAL - Geological Survey	676,471,272	710,432,223	724,418,000

TECHNOLOGY TRANSFER ACTIVITIES IN THE U.S. GEOLOGICAL SURVEY

An integral part of the U.S. Geological Survey's (USGS) mission, as set forth in its Organic Act of March 3, 1879, has been the publication and reporting of information about the Nation's energy, minerals, water and land resources and the geologic structure of the United States and the understanding of earth processes and hydrologic principles. Annual appropriations language has included the directive to "publish and disseminate data relative to the foregoing activities" for many decades. Cooperative and jointly funded research projects with the non-Federal sector are an important component of many USGS programs. In addition, workshops, seminars, symposia, publications, public information facilities, and systems for accessing data bases and indexes respond to over one million contacts and requests for information annually.

Cooperative Research and Investigations Current projects jointly funded with the private sector include: 1) two projects with the Electric Power Research Institute (EPRI) to a) define the impact of earthquakes and landslide processes on the design, siting, and operation of critical facilities such as nuclear power plants, and b) conduct research on the reaction of compressed air with common minerals in order to store such air underground for use as a combustion agent in the generation of electricity, 2) research with IBM to determine materials having very low concentrations of alpha particle emitters for use in the manufacture of computer chips and 3) a project with the Gas Research Institute (GRI) to investigate the availability and origin of deep natural gas. An Industrial Associate is compiling a landslide susceptibility map of California utilizing technology developed by the USGS.

Cooperative research in the areas of artificial intelligence and geographic information systems has been conducted with the University of California, Santa Barbara since 1982. The research resulted in a Knowledge Based Geographic Information System (KGBIS) which utilizes a new structure for spatial data. During FY 1988 the KGBIS software was enhanced with a graphics interface which allows interactive display of the results of queries. All the KGBIS software is in the public domain and interest has been expressed in the system by several private sector companies. Cooperative agreements are also in place with South Dakota State, Nebraska, and Kansas Universities on research and scientific exchange in remote sensing and geographic information technologies. Minerals related cooperative agreements with the private sector include an agreement with 1) Newmont Exploration Limited whereby the USGS provides drill core and Newmont provides analyses of the core, and 2) Barranca Resources to jointly conduct studies to determine the geochemical controls on ore deposition at Goldfield, Nevada.

The Water Resources Federal-State Cooperative Program is a partnership for water resources investigations wherein the cooperators contribute at least half the funds and the USGS performs almost all of the work. Begun in 1895, the Cooperative Program in 1990 had more than 900 State and local agencies working with the USGS in a balanced program that recognizes the needs, priorities, and resources of all parties. This cooperative effort generates much of the hydrologic information needed for planning, developing and managing the water resources of the United States.

The Water Resources Research Act of 1984 (P.L. 98-242) established programs of grants and contracts for research, technology development and information transfer that aid the Nation and the States in solving water resources problems. Under this authorization the USGS provides formula matching grants to each of 54 designated State Water Resources Research Institutes to partially finance their research and information transfer activities. In addition the USGS administers equal matching grants to the Institutes, universities, foundations, firms, individuals, or agencies of State and local governments for research concerning any aspect of water resource related problems deemed to be in the national interest.

Information Facilities and Data Access The USGS operates a number of facilities which disseminate information on cartographic and geographic data and products of Federal and State agencies and private sector organizations. Major activities include direct user contact facilities such as a network of 10 Public Inquiries Offices providing information about and sale of topographic and thematic maps and geologic, water resources and general earth science publications and data produced by the USGS. A National Cartographic Information Center operates through affiliate agreements in 49 States to provide both State information services and information assistance and sale of USGS cartographic products such as aerial and space images.

Field offices in Reno, Nevada and Tucson, Arizona are co-located at the Universities of Nevada and Arizona to facilitate the exchange of ideas and research opportunities. These offices, including the Spokane, Washington office, are staffed by USGS scientists from several disciplines who conduct field-based mineral resource studies in cooperation with university personnel and have expanded communication between the government agencies and the mining industry. Mineral Information Offices (MIO) are in Washington, D.C., Reno, Nevada, Tucson, Arizona and Spokane, Washington in conjunction with the Bureau of Mines where mineral resource experts provide information and access to databases, commodity specialists, and publications for the benefit of the public, industry, academia, and State and Federal officials. The MIO's also seek to improve the exchange of mineral information between other minerals information generators and users and federal agencies.

Many data bases are available on digital tape or in disk form especially cartographic and remote sensing data. The National Water Data Exchange (NAWDEX) provides public access to all federally acquired water data through operation of a national water-data indexing system and a national user service program The data exchange program includes a nationwide network of 76 assistance centers and liaison with water oriented organizations. The Water Resources Scientific Information Center (WRSIC) is designed to increase the availability of knowledge of water related scientific and technical information by abstracting water resources publications, and making this information promptly and readily available to the water resources community and the public through publications and computerized bibliographic information services. With funds provided by the Congress in FY 1990, a major effort will be undertaken to modernize these information systems as elements of a National Water Resources Information Clearinghouse. Examples of other data bases that provide information to the non-Federal sector include the National Coal Resources Data System (NCRDS) which includes data provided by the participating coal bearing States, and the Mineral Resource Data System (MRDS).

A Special Interest Group on CD-ROM Applications and Technology (SIGCAT) was initiated by the USGS in 1986 to investigate the use of compact disc-read only memory (CD-ROM) technology. This dense data storage medium is similar to the compact audio discs now available commercially and can be read using a personal computer. CD-ROM technology could revolutionize the distribution of and access to the vast quantity of data produced by the USGS and other scientific and technical data collection and analysis organizations. Approximately one third of the 1,800 members of SIGCAT are from the private sector. During FY 1988, the Survey produced and distributed a CD-ROM containing imaging sonar data from the Gulf of Mexico. The SIGCAT is also currently investigating the feasibility of using private industry resources to produce CD-ROMs of other Federal government databases.

Workshops, Seminars, Publications and Briefings USGS scientists participate regularly in various scientific meetings, frequently as invited speakers to present papers on the latest results of their research. These scientists also publish numerous articles in scientific journals of many disciplines. The McKelvey Forum is held annually, alternating between presenting the latest developments in exploration technology for energy one year and mineral resources the next. Average attendance at the Forum is about 700 representatives from industry, academia, and all levels of government. The joint USGS/NOAA Office for Exclusive Economic Zone (EEZ) Mapping and Research hosts biannual EEZ Symposia that are also supported by the Minerals Management Service and the Bureau of Mines and attended by about 300 representatives from the public and private sector. Public meetings to present and discuss the preliminary mineral resource assessments of 2-degree quadrangles in the conterminous U.S. and Alaska are well received and attended by approximately 400 representatives from industry, academia, and the State and local government planning and regulatory community. Regional meetings are held to review and evaluate the applications of the results of research conducted under the National Earthquake Hazards Reduction Program, usually in co-sponsorship with the National Science Foundation, Federal Emergency Management Agency, and the Office of U.S. Foreign Disaster Assistance. Significant accomplishments resulting from these meetings include the revision of zoning and building codes and dissemination of information on safety measures to be taken during an earthquake. Working and advisory groups are established with staffs composed of State and local personnel who are trained to carry out the hazards reductions and mitigation procedures identified by the assessment and are equipped to maintain the continuity of the implementation plans.

The William T. Pecora Memorial Remote Sensing Symposium is sponsored jointly each year with different Federal agencies and held in Sioux Falls, South Dakota. Approximately one-half of the 300-500 participants are from the non-Federal sector meeting to exchange and present the latest remote sensing applications and technology advances. The emerging technology and applications for geographic information systems (GIS) has been made available through more than 175 demonstrations at professional and technical conferences and meetings within the past three years, and data exchange standards are being developed with both government and industry groups.

Exhibit 44B

TECHNOLOGY TRANSFER ACTIVITIES
U.S. GEOLOGICAL SURVEY

(in thousands of dollars)

	Estimated FY 1989	Estimated FY 1990	Estimated FY 1991
Amount allocated for technology transfer	$28,400	$32,400	$29,200
Number of patent applications	3	2	2
Number of patents awarded	2	2	2
Number of licenses awarded	--	--	1
Amount of license royalties or other income	$--	$--	$4
Amount of royalties paid to inventors	--	--	--
Amount of other cash awards paid to inventors	$0.5	$0.5	$0.5
Number of cooperative R&D agreements (excludes Water Resources agreements)	11	7	7
Value of cooperative R&D agreements	$33,800	$33,700	$27,300

Authorization for Purchase of 26 Passenger Motor Vehicles, are for replacement only

The vehicles requested are used to transfer men and equipment over all types of roads and terrain and in all kinds of weather, in the conduct of the field work of the Geological Survey. These vehicles must provide dependable service at all times, since a great deal of the transportation required is in areas where repair services are not available. Field use tends to shorten the efficient life of a vehicle.

The 26 vehicles to be replaced, as shown below, will meet or exceed the age or mileage replacement standards prescribed by the General Services Administration, and can no longer give dependable and economical service. The effective use of interagency motor pools, where location and equipment permit, has been carefully considered in estimating these requirements.

	Sedans	Station Wagons	Total
Replacements based on			
Mileage	0	0	0
Age and mileage	8	9	17
Age	4	5	9
Additions:	0	0	0
TOTAL	12	14	26
Total passenger vehicles owned by Geological Survey	21	48	69

DEPARTMENT OF THE INTERIOR
FY 1991 Budget for Consulting Services

Bureau: Geological Survey

Appropriation Title **Type** of Consulting Arrangement **Program** Requiring Service	FY 1991 Request ($ thousands)	Description of Services **Being Acquired**
Surveys, Investigations, and **Research** 14-0804-0-1-306		
Personnel Appointments		
Nuclear Reactor Hazards Committee	4	Three faculty member from universities with reputable nuclear engineering departments are required by the Nuclear Regulatory Commission to perform periodic reviews of the Denver reactor.

ADMINISTRATIVE PROVISIONS

The amount appropriated for the Geological Survey shall be available for purchase of not to exceed [27] *26* passenger motor vehicles, for replacement only; reimbursement to the General Services Administration for security guard services; contracting for the furnishing of topographic maps and for the making of geophysical or other specialized surveys when it is administratively determined that such procedures are in the public interest; construction and maintenance of necessary buildings and appurtenant facilities; acquisition of lands for gauging stations and observation wells; expenses of the United States National Committee on Geology; and payment of compensation and expenses of persons on the rolls of the Geological Survey appointed, as authorized by law, to represent the United States in the negotiation and administration of interstate compacts: *Provided*, That activities funded by appropriations herein made may be accomplished through the use of contracts, grants, or cooperative agreements as defined in Public Law 95-224. *(Department of the Interior and Related Agencies Appropriations Act, 1990.)*

DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY
Appropriation: Surveys, Investigations, and Research

ADMINISTRATIVE PROVISIONS

1. The amount appropriated for the Geological Survey shall be available for purchase of not to exceed 26 passenger motor vehicles, for replacement only;

31 U.S.C. 638a(a)(b)

31 U.S.C. 638a(a) provides that, "Unless specifically authorized by the appropriation concerned or other law, no appropriation shall be expended to purchase or hire passenger motor vehicles for any branch of the Government. ..."

31 U.S.C. 638a(b) provides that, "Excepting appropriations for the military and Naval Establishments, no appropriation shall be available for the purchase, maintenance, or operation of any aircraft unless specific authority for the purchase, maintenance, or operation thereof has been or is provided in such appropriation."

2. reimbursement to the General Services Administration for security guard services; contracting for the furnishing of topographic maps and for the making of geophysical or other specialized surveys when it is administratively determined that such procedures are in the public interest;

No specific authority

These provisions are required by reason of rulings of the Comptroller General that specific authority is required for reimbursing the General Services Administration for guard services (B-87255); and for contracting with private persons for the performance of duties with which the agency is specifically charged (15 Comp. Gen. 951).

3. construction and maintenance of necessary buildings and appurtenant facilities;

No specific authority

The Organic Act of 1879, establishing the Geological Survey and providing for "...examination of the geological structure, mineral resources, and products of the national domain" (43 U.S.C. 31) is general authorization for construction of special-purpose laboratory buildings. Specific authorization by the Congressional committees on public works is not needed because of the highly specialized purposes of the building. 40 U.S.C. 612: "The term 'public building' means any building ... which is generally suitable for office or storage space ... but shall not include any such buildings and construction projects: ... (E) on or used in connection with ... or for nuclear production, research, or development projects."

41 U.S.C. 12: "No contract shall be entered into for the erection, repair, or furnishing of any public building ... which shall bind the government to pay a larger sum of money than the amount in the Treasury appropriated for the specific purpose."

4. acquisition of lands for gauging stations and observation wells;

43 U.S.C. 36(b)

43 U.S.C. 36(b) provides that, "The Secretary of the Interior may, on behalf of the United States and for the use by the Geological Survey in gaging streams and underground water resources, acquire lands by donation or when funds have been appropriated by Congress by purchase or condemnation. ..."

5. expenses of the U.S. National Committee on Geology;

43 U.S.C. 31

43 U.S.C. 31 participation in and payment of expenses of the U.S. National Committee on Geology is a proper and necessary function of the Geological Survey, and so is authorized by the Survey's Organic Act of March 3, 1879, 43 U.S.C. 31. This Act provides that, "...The Director of the Geological Survey, which office is established, under the Interior Department, shall be appointed by the President by and with the advice and consent of the Senate. This officer shall have the direction of the Geological Survey, and the classification of the public lands and examination of the geological structure, mineral resources, and products of the national domain. ..."

6. and payment of compensation and expenses of persons on the rolls of the Geological Survey appointed, as authorized by law, to represent the United States in the negotiation and administration of interstate compacts.

66 Stat. 453

The above language first appeared in the Appropriation Act for FY 1953, P.L. 82-470(66 Stat. 453), and has been repeated in each Act since that date. Article I, Section 10, paragraph 3, of the United States Constitution provides that, No State shall, without the consent of Congress, lay any duty on tonnage, keep troops, or ships of war in time of peace, enter into any agreement or compact with another State, or with a foreign power, or engage in war, unless actually invaded, or in such imminent danger as will not admit or delay." (emphasis supplied)

Thus each interstate compact must be approved by the Congress and signed by the President. The Public Law approving each interstate compact represents the authorizing legislation.

7. Provided, That activities funded by appropriations herein made may be accomplished through the use of contracts, grants, or cooperative agreements as defined in Public Law 95-224.

Department of the Interior and Related Agencies Appropriations Act, 1988, as included in Public Law 100-202.

Permanent Authority:

P.L. 100-202
Department of the Interior and Related Agencies Appropriations Act, 1988

8. Provided, That appropriations herein and hereafter made shall be available for paying costs incidental to the utilization of services contributed by individuals who serve without compensation as volunteers in aid of work of the Geological Survey, and that within appropriations herein and hereafter provided, Geological Survey officials may authorize either direct procurement of or reimbursement for expenses incidental to the effective use of volunteers such as, but not limited to, training, transportation, lodging, subsistence, equipment, and supplies.

P.L. 100-202
Department of the Interior and Related Agencies Appropriations Act, 1988

9. Provided further, That provision for such expenses or services is in accord with volunteer or cooperative agreements made with such individuals, private organizations, educational institutions, or State or local government.

ALLOCATIONS RECEIVED FROM OTHER ACCOUNTS

Note: Obligations incurred under allocations from other accounts are included in the schedules of the parent appropriation as follows:

Department of State:

"American sections, international commissions."

	FY 1989	FY 1990	FY 1991
Funds	$ 494,000	$ 556,000	$ 609,000
Full-time equivalent personnel:			
Permanent	11	11	11

General Services Administration:

"Federal Buildings Fund"

	FY 1989	FY 1990	FY 1991
Funds	$4,973,676	$6,146,000	$6,052,000
Full-time equivalent personnel:			
Permanent	23	31	31

DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
DETAIL OF PERMANENT EMPLOYMENT

GRADE	1989 Actual	1990 Estimate	1991 Estimate
Executive Level V	1	1	1
Subtotal	1	1	1
ES-6	2	2	2
ES-5	3	3	3
ES-4	32	32	32
ES-3	9	9	9
ES-2	2	2	2
ES-1	--	--	--
Subtotal	48	48	48
GS-18	--	--	--
GS-17	1	1	1
GS-16	2	2	2
GS/GM-15	546	546	546
GS/GM-14	628	628	627
GS/GM-13	977	977	975
GS-12	1,198	1,198	1,196
GS-11	1,260	1,260	1,258
GS-10	172	172	172
GS-9	1,071	1,071	1,069
GS-8	240	240	240
GS-7	704	704	703
GS-6	588	588	587
GS-5	448	448	447
GS-4	267	267	266
GS-3	62	62	62
GS-2	37	37	37
GS-1	--	--	--
Subtotal	8,201	8,201	8,188

DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
DETAIL OF PERMANENT EMPLOYMENT

	1989 Actual	1990 Estimate	1991 Estimate
Grades established by the Administrator, Agency for International Development: (75 Stat. 450)			
FC-13	1	1	1
FC-12	9	9	9
FC-11	11	11	11
FC-10	6	6	6
FC-9	3	3	3
FC-8	2	2	2
FC-6	1	1	1
FC-4	1	1	1
Subtotal	34	34	34
Ungraded	192	192	192
Total permanent employment, end of year	8,476	8,476	8,463
Positions by Fund:			
SIR	6,402	6,391	6,380
Reimbursements	2,040	2,043	2,041
Allocation Accounts	34	42	42
TOTAL	8,476	8,476	8,463
Worker-Trainee Opportunity Program	(10)		

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUDGET JUSTIFICATIONS, F.Y. 1991

March 3, 1849

MINERALS MANAGEMENT SERVICE

NOTICE: These budget justifications are prepared for the Interior and Related Agencies Appropriations Subcommittees. Approval for release of the justifications prior to their printing in the public record of the Subcommittee hearings may be obtained through the Office of Budget of the Department of the Interior.

DEPARTMENT OF THE INTERIOR
MINERALS MANAGEMENT SERVICE
Fiscal Year 1991 Budget

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GENERAL STATEMENT

The Minerals Management Service (MMS) has two major responsibilities: timely collection, distribution, accounting and auditing of revenues owed by holders of mineral leases on Federal and Indian lands; and management of energy and mineral resources on the Nations's Outer Continental Shelf. These responsibilities are carried out under the provisions of the Federal Oil and Gas Royalty Management Act, the Mineral Leasing Act, the Indian Mineral Leasing Acts, the Outer Continental Shelf (OCS) Lands Act, and other related statutes.

Comparison of 1991 President's Budget with 1990 Enacted Budget

(Dollar amounts in thousands)

Appropriation Requested		FY 1990 Enacted to Date	FY 1990 Adjusted Appn	FY 1991 Estimate	Inc.(+) Dec.(-) From Enacted
Leasing and Royalty Management	$ (FTE)	178,525 (2,076)	176,042 (2,076)	194,252 (2,109)	+15,727 (+33)
Payments to States from Receipts under Mineral Leasing Act	$ (FTE)	471,043 (---)	471,043 (---)	483,244 (---)	+12,201 (---)
Total, MMS	$ (FTE)	649,568 (2,076)	647,085 (2,076)	677,496 (2,109)	+27,928 (+33)

The objective of the MMS royalty management program is to enhance the relationship between the Federal Government and private industry in the process of ensuring that all revenues properly owing from mineral leases on Federal and Indian lands are fairly and efficiently collected, accounted for, and dispersed in a manner that meets or exceeds Federal financial integrity requirements and recipient expectations. The objective of the OCS program is to promote responsible stewardship of the energy and mineral resources of the OCS by establishing management policies and programs that help achieve balanced development in an environmentally sound manner.

The major missions of the programs included in the appropriation "Leasing and Royalty Management" are to:

(1) collect and account for all revenues due the Federal Government, States, and Indian Tribes from onshore and offshore mineral leases on lands under Federal jurisdiction or Indian lands;

(2) distribute all revenues collected to authorized recipients;

(3) review and audit collection and distribution processes to ensure that all collections and disbursements are accomplished in accordance with existing laws and regulations;

(4) husband the nation's oil, gas and other natural resources while ensuring human safety and protecting the environment by supervising energy and mineral exploration, development, and production operations on Federal leases;

(5) identify areas that could potentially contribute to the nation's energy and mineral needs by classifying and assessing the energy and non-energy mineral resources of offshore areas;

(6) support the minimization of adverse environmental impacts and to support the making of fully informed decisions on lease proposals and permit reviews by describing and evaluating the effects of the offshore program on the marine and coastal environment; and

(7) make available for lease, as appropriate, subject to environmental, energy, economic, and other considerations, portions of the OCS for exploration and possible development of oil, gas and other mineral resources in order to support the nation's energy needs.

The appropriation "Payments to States from Receipts under Mineral Leasing Act" provides States with a statutory share of bonuses, rents, royalties and interest collected by the Federal Government for minerals produced on onshore Federal lands. This appropriation also provides: interest owed States and Indian accounts when mineral leasing revenues due them are not disbursed within the time established by the Federal Oil and Gas Royalty Management Act of 1982; interest owed industry payors who successfully appeal royalty payment orders and are refunded all or part of the principal paid and held by the Government as a result of those orders; and rewards to persons who provide information to the Government which results in the collection of additional mineral revenues owed the Government.

The programs and missions of the MMS are conducted by the major components shown in the organizational chart on page MMS-6.

Highlights of the 1991 Request

The proposed funding level represents an increase of $14.0 million from 1990 in the Leasing and Royalty Management (LARM) appropriation, and an increase of $11.6 million in the appropriation for "Payments to States from Receipts under Mineral Leasing Act." Increases/decreases in the LARM appropriation include:

OCS Lands Activity

- Environmental studies program ($6.1 million) including $3.6 million for Global Change research and $2.6 million for other environmental studies,
- Safety and pollution prevention research ($0.5 million),
- Maintenance of the Perkin-Elmers computer system ($0.1 million),
- Departmental education initiative ($0.3 million),
- Conflict resolution ($0.6 million),
- Upgrading helicopter services ($1.2 million),
- Small decreases (-$0.2 million)

Royalty Management Program (RMP)

- Expand and improve services for Indian Tribes and Allottees ($1.7 million),
- Continue the contemporaneous audit initiative ($1.8 million),
- Upgrade the mainframe computer ($1.4 million),
- Perform new workloads in fiscal accounting services ($1.0 million),
- Other increases to maintain and improve service levels ($0.4 million).

General Administration

- Reduction to account for completion of the Ventura move in FY 1990 (-$2.0 million),
- Enhancement of the Women and Minorities program ($0.3 million) and the Appeals program ($0.2 million),
- Equipment modernization ($0.4 million),
- Additional other small increases and decreases in all three activities ($0.1 million).

The increase in the "Payments to States from Receipts under Mineral Leasing Act" appropriation is primarily due to higher oil and gas royalty, rent and bonus payments, as well as an increase in coal bonuses ($12.2 million). An increase in the Miscellaneous Payments activity ($.6 million) is also accounted for in this total.

Leasing and Royalty Management

Outer Continental Shelf (OCS) Lands

A net increase of $8.7 million from the 1991 base is proposed for OCS programs. Environmental studies program increases by $6.1 million, including $3.6 million as part of the Administration's Global Change initiative and $2.5 million for other OCS environmental studies. This increase will fund three proposals for focused study efforts and will lead to a better understanding of coastal and marine environments. The information will support decision makers in DOI, affected States, and other interested bodies.

Increased efforts in conflict resolution and initiation of an oceans energy/environment education program would be funded by a requested increase of $0.9 million. This increase will help expand public awareness of the issues involved in the OCS program and of the multiple steps that are built into the leasing process to review environmental concerns and provide appropriate environmental protection. A request for $0.1 million is needed to cover the increasing cost of maintaining the aging Perkin-Elmer Computer System.

Increases totalling $1.2 million are requested for helicopter costs and other costs related to the OCS inspection program. Of that amount, $0.3 million will cover increased helicopter rates needed to maintain the current level of operations. An increase of $0.5 million is required to cover increased inspection activities required by revised Offshore Operating Regulations. An increase of $0.4 million is required to perform liquid royalty meter site security inspections.

A net $0.5 million increase in the Technology Assessment and Research Program (TA&R) will cover the cost of inflation and ensure an active research effort into the effectiveness of blowout prevention technology, the structural integrity of deep water platforms and pipelines, and the impact of OCS operations on air quality.

A transfer of $0.1 million and 1 FTE will be made from the OCS Lands activity to the General Administration budget activity to consolidate and improve the use of training resources.

It should be noted that the preceding program changes do not attempt to anticipate the outcome of current deliberations by the President's OCS Task Force for OCS Leasing and Development. The findings and recommendations of this task force, which were forwarded to the President in January 1990, may impact the OCS budget requirements.

Royalty Management Program (RMP)

A net increase of $6.3 million from the 1991 base is proposed for the RMP. An increase of $1.7 million and 13 FTE are requested for an Initiative for Indian Tribes and Allottees (IITA). These funds will contribute to the initiative which expands and improves the level of services provided for these groups. RMP will review and resolve improper overrecoupments of royalties so that allottees can expect relatively consistent monthly payments and will better assure timely royalty payments to allottees by expediting disbursements to the Bureau of Indian Affairs. The RMP will provide additional auditing services to Indian Tribes and allottees by expanding the cooperative audit program with the Tribes and initiating a spot audit approach to target leases that might otherwise not received audit coverage. The RMP will also expand the Office of External Affairs to improve issue resolution with the Indian community. Also, various software enhancements to support operational needs arising from this initiative will be developed and implemented.

A $1.8 million increase and 26 FTE are requested to provide the final increment for the effort initiated in FY 1989 to place the audit schedule on a more contemporaneous basis.

A $1.4 million increase is requested to fund an expansion of the RMP's data processing capacity through an upgrade of the IBM mainframes's central processing unit.

A $1.0 million increase is requested to perform new workloads for fiscal accounting services and to assure that service levels are maintained at an adequate level. An increase of $0.5 million is requested to enable the program to maintain its current activities at their existing levels.

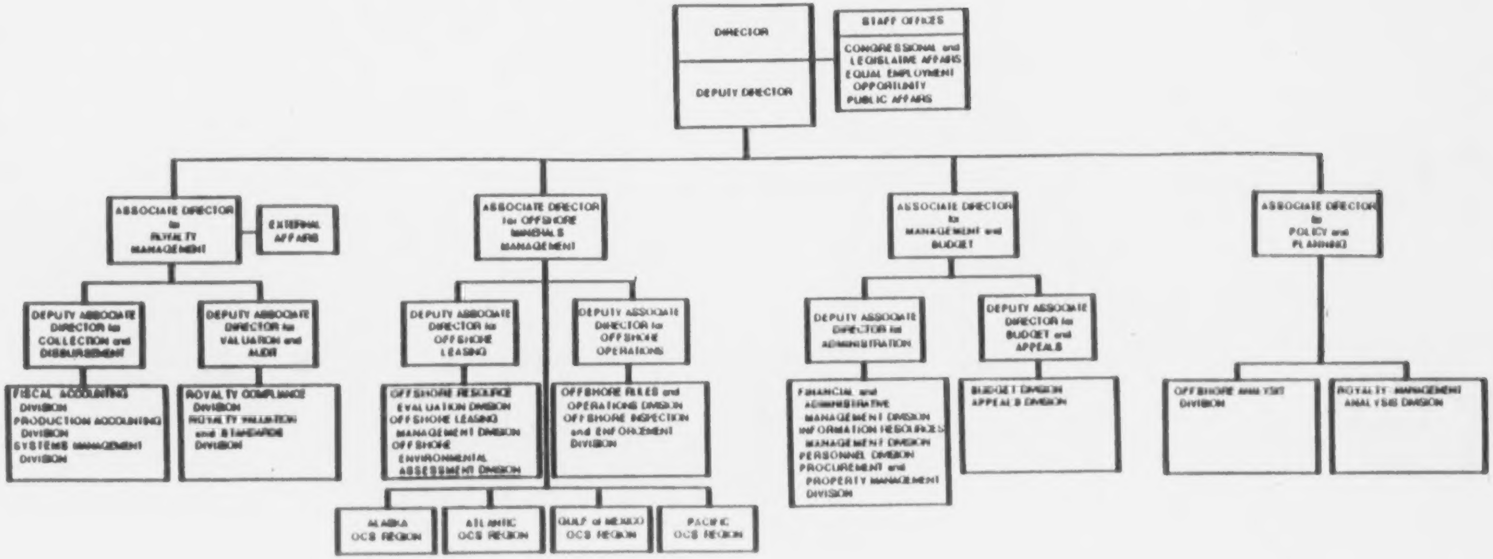
Increases totaling $0.1 million are requested to improve payor compliance on certain valuation issues and to improve States and Tribes access to the Auditing System.

A $0.1 decrease is proposed as the result of obligations due certain companies on overpayments being satisfied in FY 1990 and the transfer of training funds to the General Administration activity.

General Administration

For General Administration, there is a net decrease of $1.1 million. Decreases of $2.1 million result from the relocation of the Pacific OCS Regional Office and reduction of miscellaneous general support costs. These decreases are partially offset by increases totalling $1.0 million and 4 FTE for appeals review and processing, equipment modernization, EEO recruitment, training, and MMS's share of the Department's Take Pride in America program.

MINERALS MANAGEMENT SERVICE


DIRECTOR
DEPUTY DIRECTOR
STAFF OFFICES
CONGRESSIONAL and LEGISLATIVE AFFAIRS
EQUAL EMPLOYMENT OPPORTUNITY
PUBLIC AFFAIRS
ASSOCIATE DIRECTOR for ROYALTY MANAGEMENT
EXTERNAL AFFAIRS
DEPUTY ASSOCIATE DIRECTOR for COLLECTION and DISBURSEMENT
FISCAL ACCOUNTING DIVISION
PRODUCTION ACCOUNTING DIVISION
SYSTEMS MANAGEMENT DIVISION
DEPUTY ASSOCIATE DIRECTOR for VALUATION and AUDIT
ROYALTY COMPLIANCE DIVISION
ROYALTY VALUATION and STANDARDS DIVISION
ASSOCIATE DIRECTOR for OFFSHORE MINERALS MANAGEMENT
DEPUTY ASSOCIATE DIRECTOR for OFFSHORE LEASING
OFFSHORE RESOURCE EVALUATION DIVISION
OFFSHORE LEASING MANAGEMENT DIVISION
OFFSHORE ENVIRONMENTAL ASSESSMENT DIVISION
DEPUTY ASSOCIATE DIRECTOR for OFFSHORE OPERATIONS
OFFSHORE RULES and OPERATIONS DIVISION
OFFSHORE INSPECTION and ENFORCEMENT DIVISION
ALASKA OCS REGION
ATLANTIC OCS REGION
GULF of MEXICO OCS REGION
PACIFIC OCS REGION
ASSOCIATE DIRECTOR for MANAGEMENT and BUDGET
DEPUTY ASSOCIATE DIRECTOR for ADMINISTRATION
FINANCIAL and ADMINISTRATIVE MANAGEMENT DIVISION
INFORMATION RESOURCES MANAGEMENT DIVISION
PERSONNEL DIVISION
PROCUREMENT and PROPERTY MANAGEMENT DIVISION
DEPUTY ASSOCIATE DIRECTOR for BUDGET and APPEALS
BUDGET DIVISION
APPEALS DIVISION
ASSOCIATE DIRECTOR for POLICY and PLANNING
OFFSHORE ANALYSIS DIVISION
ROYALTY MANAGEMENT ANALYSIS DIVISION

Payments to States from Receipts under Mineral Leasing Act

The Minerals Management Service is responsible for the collection and distribution to the States of a share of bonuses, royalties, and rents from the leasing of onshore Federal mineral resources in accordance with applicable laws. This appropriation consists of two budget activities: Payments to States from Receipts under Mineral Leasing Act and Miscellaneous Payments.

Payments to States

Payments to States from mineral leasing receipts are estimated to increase by $11.6 million from FY 1990. This increase is based on expected increases in prices of oil (+1.6 percent) and gas (+4.9 percent). In addition, new regulations have been proposed for determining the value of coal for royalty purposes. If the proposal is adopted, federal coal lessees no longer would be permitted to deduct the costs of federal Black Lung excise taxes, abandoned mine lands fees, and State and local severance taxes from the value of coal before computing royalties. The FY 1991 budget estimates include an increase in receipts based on this proposed rule change. Based on recent industry interest and the pending decertification of the Powder River Basin region, which will allow for leasing by application, coal bonuses are expected to increase. Coal production and price are estimated to increase 2.0 percent and 1.6 percent, respectively, from FY 1990; however, the FY 1990 estimate includes $87 million from coal lease readjustment cases expected to be resolved during FY 1990.

Miscellaneous Payments

Miscellaneous Payments increases, estimated to total $558,000, are requested for four categories of payments.

1) Interest on late payments ($200,000) to compensate States and Indian Tribes when mineral leasing revenues are not disbursed within legislatively prescribed timeframes.
2) An appropriation of $150,000 and authority to pay interest on refunds to industry payors who successfully appeal royalty payment orders and are refunded all or part of the principal paid to and held by the Government.
3) Rewards ($200,000) for persons who provide information to the Government which results in the collection of additional mineral revenues owed to the Government.
4) A one-time increase of $8,000 and authorization to refund overpayments made on Indian allotted leases.

Authorizations

The basic authorizing legislation for the Minerals Management Service includes: the OCS Lands Act of 1953 (43 U.S.C. 1331 et seq.); the OCS Lands Act Amendments (P.L. 95-372); the Mineral Leasing Act (30 U.S.C. 181 et seq.); 30 U.S.C. 191a; the Federal Oil and Gas Royalty Management Act of 1982 (30 U.S.C. 1701, et seq.); the Indian Mineral Leasing Acts of 1891, 1909, and 1938; and the Indian Mineral Development Act of 1982.

DEPARTMENT OF THE INTERIOR

FY 1991 Budget for Consulting Services

Bureau: Minerals Management Service

Appropriation Accounting Title Program Requiring Services	FY 1991 Request (in thousands of dollars)	Description of Services Being Acquired
Leasing and Royalty Management 14-1917-0-1-302		
Outer Continental Shelf Lands	600	To provide an unbiased independent evaluation of the adequacy and applicability of past MMS/Environmental Studies Program studies, specific recommendations for future studies, and state-of-the art overview of available information on each major issue reviewed.
Royalty Management	392	To provide the Royalty Management Program with objective expert accounting advice and related consulting services in reviewing and evaluating certain RMP functions so that program effectiveness can be maximized.
Account Total	992	

Appropriation Summary Statement

Minerals Management Service

Appropriation: Leasing and Royalty Management

This annual operating appropriation provides resources to enable the Service to carry out its responsibilities for:

- collecting, depositing, auditing, and distributing royalties and other mineral revenues due the Federal Government, States, and Indian Tribes, from Federal onshore and offshore mineral leases and leases on Indian lands;
- exercising regulatory authority over industry operations in the exploration, development and production of leasable energy and mineral commodities on the OCS lands in an environmentally sound manner and to protect human safety;
- classifying and evaluating the energy, solid mineral, and environmental resources of OCS lands;
- collecting a comprehensive body of environmental information and performing environmental assessments to ensure the balanced development of OCS mineral resources in compliance with the OCS Lands Act, the National Environmental Policy Act (NEPA), and other environmental protection laws; and
- implementing the 5-year Outer Continental Shelf (OCS) Oil and Gas Program approved in July 1987 and developing the next 5-year program.

The 1991 appropriation request for these activities totals $194,252,000. A summary of the changes proposed from the 1991 base is provided below.

Outer Continental Shelf Lands (+$8,748,000):

This budget activity funds the program for the Outer Continental Shelf Land (OCS) including: (1) resource evaluation of potential oil and gas, and other OCS minerals; (2) performing environmental studies and assessments; (3) analyses and development of 5-year OCS program proposals; (4) consultation with affected States and other parties and development of issue analyses and decision documents; (5) development and implementation of bid adequacy procedures to assure that the Government receives fair market value for lands leased and rights conveyed; (6) sales, issuance, and maintenance of leases; (7) development and enforcement of regulatory requirements for exploration, development, and production operations to ensure safety and protect the environment; and (8) development of an inventory of information on mineral resources on OCS lands and dissemination of that information. While most of the MMS's efforts concern OCS oil and gas, the agency also performs the above functions for other minerals (e.g., sulfur, phosphorite and gold) on offshore lands under Federal jurisdiction.

The following program changes from the FY 1991 base for the OMM are proposed:

-- Environmental Studies. The MMS has submitted several proposals for research concerning Global Change. These proposals are related to studies currently planned or underway in the Environmental Studies Program. The FY 1991 request for the proposals is $3,575,000. In addition, $1,600,000 is requested to fund critical new studies in controversial areas. An increase of $1,000,000 is requested to restore funds to the Environmental Studies Program which were redistributed to the Technology Assessment and Research Program in FY 1990 for the enhanced oil spill containment and cleanup research program.

-- Conflict Resolution and Education. The OCS leasing program has experienced a series of congressional moratoria, lawsuits, and other delays over a period of several years. The delays are partly a result of lacking or conflicting information and different perceptions regarding the level of acceptable risk. Funding of $615,000 will allow for increased participation in joint task forces or other cooperative ventures to resolve issues, and to contract, where appropriate, to third-party mediators to resolve specific program issues. An increase of $300,000 would be used to hire a consultant to prepare an oceans energy/environmental education curriculum for distribution to elementary, secondary and post-secondary schools and also to develop materials for general public information.

-- Perkin-Elmer Computer. A total increase of $111,000 is requested for maintenance of the Perkin-Elmer computers. This will cover the increasing cost of maintenance contracts and partially assist in planning for the replacement of Offshore's primary support computers.

-- Helicopters and Regulatory Inspection. An increase of $300,000 is required to cover a 5.85 percent lease price rate increase for helicopter usage in the Gulf of Mexico. An additional $465,000 will fund helicopter conversions to twin engine aircraft which will support the additional inspection activities required by the recently revised Offshore Operating Regulations. Funding of $400,000 is required to perform liquid royalty meter site security inspections and to witness the required provings/calibrations of meters. This total increase is $1,165,000.

-- Technology Assessment and Research. An additional $461,000 is requested to cover the increasing costs of maintaining an active research effort. As the industry moves into deeper water and harsher environments, increased research efforts are needed to provide rigorous independent analysis of the methods and materials used by industry.

-- Centralized Training. A transfer of $79,000 and 1 FTE is being made to the Administrative Operations subactivity of the General Administration budget activity to consolidate and improve the utilization of training resources.

Royalty Management (+$6,285,000)

The Royalty Management Program (RMP) provides for the collection, distributing, accounting, and auditing of mineral revenues due the Federal Government, States, and Indian lessors from minerals produced on Federal onshore, Indian, and Outer Continental Shelf lands. In addition, the RMP performs a compliance function to assure that those who report and make payments to MMS have done so in accordance with all pertinent statutes and regulations. In FY 1991, it is estimated that RMP will collect and account for approximately $4.0 billion in mineral leasing revenues. The program comprises three major automated revenue and production accounting systems supported by numerous pieces of auditing software. Dissemination of information to affected States and other parties involves an additional automated system and an outreach program. The following program changes from the FY 1991 base for Royalty Management are proposed:

--Initiative for Indian Tribes and Allottees (IITA). As a result of recommendations made by the Senate Select Committee on Indian Affairs and concerns raised by the Indian community, MMS is proposing a comprehensive initiative to expand and improve the services provided to these groups. Accordingly, MMS is requesting increases totaling $1.7 million and 13 FTE for IITA. In the audit area, increases of $615,000 to expand the cooperative audit program and $432,000 and 8 FTE to initiate a spot audit approach to target companies who otherwise might not receive audit coverage are requested. To improve issue resolution, $132,000 and 3 FTE are proposed to expand the Office of External Affairs. A $400,000 increase is requested to fund various software enhancements, including an assessment of the viability of developing a majority pricing system to assure proper valuation. Finally, increases of $77,000 and 2 FTE are requested to review and resolve improper recoupments and to expedite monthly disbursements of royalties.

--Contemporaneous Audit Initiative. An increase of $1.8 million and 26 FTE are requested to fund the second full year of a one-time project to place the audit cycle at the 11 residencies and at the other major payors on a more current schedule. This will accelerate the completion of prior royalty payment periods and provide faster identification and resolution of royalty payment problems.

--Central Processing Unit (CPU) Upgrade. An increase of $1.4 million is requested to fund the expansion of the RMP's data processing capacity through an upgrade of the mainframe's CPU. The additional processing capacity will allow RMP to maintain and respond to increased demands in the level of service to both RMP users and to the States and Tribes.

--Fiscal Accounting Contract. An increase of $1.0 million is requested to perform new workloads for fiscal accounting services and to assure that service levels are maintained at an adequate level.

--Other RMP Program Changes. An increase of $474,000 is requested to meet the increased costs of maintaining base level contract efforts for ongoing activities. A $66,000 increase is requested to fund the billing process associated with the implementation of allowance exception processing. A $25,000 increase is proposed for the initial step in the phased replacement of personal computers and peripherals used by States and Tribes to access the Auditing and Financial System. A decrease of $64,000 is proposed as obligations due certain companies who made overpayments on allotted leases were satisfied. A transfer of $24,000 is being made to the General Administration activity due to the consolidation of certain training resources.

General Administration (-$1,068,000)

General administrative expenses provide for management, executive direction and coordination, policy and planning, administrative support, and common support costs for the MMS. This includes such essential functions as budget, financial management, personnel administration, procurement and contract administration, property management, internal control, and information resources management. The Offices of the Director and the immediate executive staff are provided for in the Executive Direction subactivity. The Office of Administration and the Administrative Service Centers are supported by the Administrative Operations subactivity while fixed operational costs, such as rent, Federal and commercial communications, and postage, are funded in the General Support Services subactivity.

-- Pacific Regional Office Relocation. A decrease of $2.0 million is proposed due to the one-time costs associated with the relocation of the OCS Pacific Regional Office in FY 1990.

-- Appeals Review and Processing. The Appeals Division has experienced a 500 percent increase in the number of docketed cases from 1984-1989. This increase is due primarily to the enforcement of the Federal Oil and Gas Royalty Management Act of 1982, implementation of regulations, and the conduct of more audits. The proposed increase of $181,000 and 4 FTE will provide the personnel support to reduce the current docket of 406 cases and to process the expected increase in docketed appeals from industry in a timely fashion.

-- Centralized Training. Resources, totalling $103,000 and 1 FTE, are required to establish a centralized training facility in the new consolidated office facility in Herndon, Virginia. The resources will also be used to provide mandatory training through contract for staff on their responsibilities as contracting officer's technical representatives (COTRs) and other procurement issues. This is a MMS initiative to provide employees training in the management of contracts in light of the recent adverse criticism that Government procurement activities have received publicly. The proposal will not result in additional funds for MMS but would be obtained by a transfer of 1 FTE and $79,000 from OCS Lands and $24,000 from Royalty Management.

-- Equal Employment Opportunity. The proposed increase of $300,00 will allow the EEO office to respond more to the needs of women and minorities in the workplace. The emphasis of this initiative will be to involve more women and minorities in the programs and management levels. This will be accomplished by improving the recruitment effort and management training opportunities which will ultimately lead to the advancement of more women and minorities.

-- Equipment Modernization. The proposed increase of $370,000 is required for equipment modernization and upgrades. Administrative Operations has delayed its plans in the past to replace outdated equipment to improve productivity. This was necessary because administration, which is salary intensive, had to absorb unfunded pay increases.

-- Miscellaneous Support Costs. An additional decrease of $54,000 is possible due to a reduction in miscellaneous support costs such as courier services, operating building costs, and facsimile machine maintenance resulting from the co-location of staff in the new Northern Virginia facility. These two decreases are partially offset by increases for the Department's Take Pride in America and Drug Free Workplace programs.

LEASING AND ROYALTY MANAGEMENT

For expenses necessary for minerals leasing and environmental studies, regulation of industry operations, and collection of royalties, as authorized by law; for enforcing laws and regulations applicable to oil, gas, and other minerals leases, permits, licenses and operating contracts; and for matching grants or cooperative agreements; including the purchase of not to exceed eight passenger motor vehicles for replacement only; [$178,525,000 of which not less than $56,060,000 shall be available for royalty management activities: Provided, that notwithstanding any other provision of law, funds appropriated under this Act shall be available for the payment of interest in accordance with 30 U.S.C. 1721 (b) and (d):] Provided [further], That not to exceed $3,000 shall be available for reasonable expenses related to promoting volunteer beach and marine clean-up activities: [Provided further, That of the above enacted amounts, up to $250,000 proposed for data gathering to help determine the boundary between State and Federal lands offshore of Alaska shall be available only if an equal amount is provided by the State of Alaska from State revenues to match the Federal support for this project. Provided further, That of the above enacted amounts, up to one-half of the increase over the fiscal year 1989 funding provided for mineral royalty audits may be used to compensate States and Indian tribes for audit activities under the provisions of sections 202 and 205 of the Federal Oil and Gas Royalty Management Act of 1982 (30 U.S.C. 1732, 1735): Provided further, That for fiscal year 1990 and each fiscal year thereafter, notwithstanding the provisions of section 201 of the Federal Oil and Gas Royalty Management Act of 1982, sections 202 through 206 of that Act shall apply to any lease or portion of a lease subject to section 8(g) of the Outer Continental Shelf Lands Act, as amended (43 U.S.C. 1337), which for purposes of those provisions and for no other purposes, shall be regarded as within the coastal State or States entitled to receive revenues from it under section 8(g): Provided further, That notwithstanding any other provision of law, $64,000 under this head shall be available for refunds of overpayments made by Samedan Oil Corporation in connection with certain Indian leases in Oklahoma (Case No. MMS-85-0135-IND before the Director of the Mineral Management Service)

$194,252,000

Provided further, That not withstanding 5 U.S.C. 5901(a), as amended, the uniform allowance for each uniformed employee of the Mineral Management Service shall not exceed $400 annually:

and by Bow Valley Petroleum Corporation and Mapco in connection with certain Indian leases in Utah in which the Director concurred with the claimed refund due.]

Provided further that, notwithstanding 31 U.S.C.3302 any moneys hereafter received as a result of the forfeiture of a bond or other security or payment of civil penalty by an Outer Continental Shelf permittee, lessee, or right-of-way holder which does not fulfill the requirements of its permit, lease, or right-of-way or does not comply with the regulations of the Secretary shall be credited to this account to cover the cost to the United States of any improvement, protection, or rehabilitation work rendered necessary by the action or inaction that led to the forfeiture or imposition of the civil penalty, to remain available until expended: Provided further, that any portion of the moneys so credited shall be returned to the permittee, lessee, or right-of-way holder to the extent that the money is in excess of the amount expended in performing the work necessitated by the action or inaction which led to their receipt or, if the bond or security was forfeited for failure to pay the civil penalty, in excess of the civil penalty imposed.

Justification of Proposed Language Changes

LEASING AND ROYALTY MANAGEMENT

1. Addition: "and not withstanding section 5901(a) of Title 5, United States Code, as amended, the uniform allowance for each uniformed employee of the Minerals Management Service shall not exceed $400 annually."

   The proposed language is added to raise the current $125 maximum annual allowance for uniforms up to the level authorized for other uniformed agencies such as the U.S. Fish and Wildlife Service, the National Park Service and the Bureau of Land Management. This level will allow the Minerals Management Service to implement its uniform program better and permit the MMS to authorize a more equitable maximum allowance for those employees who are required to wear standard MMS uniforms in the performance of their official duties. The uniform program is intended to identify MMS employees to the public and to provide an improved image of authority and obtain cooperation in dealing with industry inspection activities; and to enhance employee pride by projecting a more professional image to the public and the industry it regulates.

2. Addition: "Provided further That, notwithstanding 31 U.S.C.3302 any moneys hereafter received as a result of the forfeiture of a bond or other security or payment of civil penalty by an Outer Continental Shelf permittee, lessee, or right-of-way holder which does not fulfill the requirements of its permit, lease, or right-of-way or does not comply with the regulations of the Secretary shall be credited to this account to cover the cost to the United States of any improvement, protection, or rehabilitation work rendered necessary by the action or inaction that led to the forfeiture or imposition of the civil penalty, to remain available until expended: Provided further, that any portion of the moneys so credited shall be returned to the permittee, lessee, or right-of-way holder to the extent that the money is in excess of the amount expended in performing the work necessitated by the action or inaction which led to their receipt or, if the bond or security was forfeited for failure to pay the civil penalty, in excess of the civil penalty imposed."

   The proposed language is added in order to properly protect public health and safety. MMS needs the authority to expend proceeds from Government securities for the protective or rehabilitative work that is needed due to lessee's default, when the surety bond provided is a Government security. In the event of a default, currently where a Government security is provided in lieu of a surety bond, the proceeds from the Government security must be deposited in the U.S. Treasury. While this is satisfactory if the default involves nonpayment of money owed the U.S., it is not when the default involves noncompliance with other provisions of the lease, such as proper well abandonment and clearance of the well site. MMS needs the authority to expend proceeds from Government securities for the protective or rehabilitative work that is needed due to the lessee's default. Similar authority is already provided to BLM and USFS.

3. Deletion: Provided further, That of the above enacted amounts, up to $250,000 proposed for data gathering to help determine the boundary between State and Federal lands offshore of Alaska shall be available only if an equal amount is provided by the State of Alaska from State revenues to match the Federal support for this project.

   The Minerals Management Service is required to delineate the boundaries of Federal jurisdiction under the Submerged Lands Act (43 U.S.C. 1301 et seq.) and the Outer Continental Shelf Lands Act (43 U.S.C. 1331 et seq.) and to help delineate boundaries of the jurisdiction of the United States of America under other Federal laws and proclamations and international law.

   The proposed deletion would remove a restriction that prevents the Federal Government from pursuing unilateral survey efforts in Alaska that are in the interest of the Federal Government. Without the deletion of the language as proposed, the State of Alaska could effectively prevent certain survey efforts by their lack of matching funding.

4. Deletion: $178,525,000 of which not less than $56,060,000 shall be available for royalty management activities: Provided, that notwithstanding any other provision of law, funds appropriated under this Act shall be available for the payment of interest in accordance with 30 U.S.C. 1721 (b) and (d):

   The language proposed for deletion restricts the Minerals Management Service from committing fiscal resources to critical areas of need. The deletion is proposed to enhance MMS's ability to respond timely to situations such as oil spills in environmentally sensitive areas and the concomitant research needs associated with them.

5. Deletion: Provided further, That of the above enacted amounts, up to one-half of the increase over the fiscal year 1989 funding provided for mineral royalty audits may be used to compensate States and Indian tribes for audit activities under the provisions of sections 202 and 205 of the Federal Oil and Gas Royalty Management Act of 1982 (30 U.S.C. 1732, 1735):

   The language proposed for deletion restricts MMS's ability to fully and effectively commit fiscal resources to priorities established by the Director. Removal of the language would eliminate those restrictions.

6. Deletion: Provided further, That for fiscal year 1990 and each fiscal year thereafter, notwithstanding the provisions of section 201 of the Federal Oil and Gas Royalty Management Act of 1982, sections 202 through 206 of that Act shall apply to any lease or portion of a lease subject to section 8(g) of the Outer Continental Shelf Lands Act, as amended (43 U.S.C. 1337), which for purposes of those provisions and for no other purposes, shall be regarded as within the coastal State or States

entitled to receive revenues from it under section 8(g):

The language, as written, provides a continuing basis for the provision, thus not requiring its inclusion.

7. Deletion: Provided further, That notwithstanding any other provision of law, $64,000 under this head shall be available for refunds of overpayments made by Samedan Oil Corporation in connection with certain Indian leases in Oklahoma (Case No. MMS-85-0135-IND before the Director of the Mineral Management Service) and by Bow Valley Petroleum Corporation and Mapco in connection with certain Indian leases in Utah in which the Director concurred with the claimed refund due.

These refunds were one-time events, therefore, not requiring inclusion in the FY 1991 appropriation language.

Appropriation Language Citations

LEASING AND ROYALTY MANAGEMENT

1. "For expenses necessary for minerals leasing and environmental studies, regulation of industry operations, and collection of royalties, as authorized by law;"

30 U.S.C. 181 _et seq._

30 U.S.C. 181 _et seq._ provides for classification and leasing of coal, oil, oil shale, natural gas, phosphate, potassium, sulfur, and sodium and the payment of bonuses, rents, and royalties on such leases.

30 U.S.C. 1701 _et seq._

30 U.S.C. 1701 _et seq._ provides for comprehensive fiscal and production accounting and auditing systems to accurately determine oil and gas royalties, interest, fines, penalties, fees, deposits, and other payments owed and to collect such amounts in a timely manner.

43 U.S.C. 1331 _et seq._

43 U.S.C. 1331 _et seq._ extends the jurisdiction of the United States to the Outer Continental Shelf; provides for granting of leases to develop offshore energy and minerals; and provides for bonuses, rents, and royalties to be paid in connection with such leases.

43 U.S.C. 1801

43 U.S.C. 1801 establishes a policy for the management of oil and gas on the Outer Continental Shelf and development of environmental studies for lease sale areas and 5-year leasing programs.

43 U.S.C. 4321-4347

43 U.S.C. 4321-4347 provides congressional declaration of a national environmental policy.

2. "for enforcing laws and regulations applicable to oil, gas, and other minerals leases, permits, licenses and operating contracts;"

30 U.S.C. 189

30 U.S.C. 189 empowers the Secretary of the Interior to prescribe necessary and proper rules and regulations to carry out the purposes of this chapter (Title 30 - Mineral Lands and Mining).

43 U.S.C.1334(a)(1)

43 U.S.C. 1334(a)(1) provides that "The Secretary shall administer the provisions of this subchapter relating to the leasing of the Outer Continental Shelf, and shall prescribe such rules and regulations as may be necessary to carry out such provisions...."

3. "and for matching grants or cooperative agreements;"

43 U.S.C. 1331-1343 43 U.S.C. 1801,
30 U.S.C. 1701, et seq.

4. "including the purchase of not to exceed 8 passenger motor vehicles for replacement only;"

31 U.S.C. 638(a)(b)

31 U.S.C. 638(a)(b) provides that "Unless specifically authorized by the appropriation concerned or other law, no appropriation shall be expended to purchase or hire passenger motor vehicles for any branch of the Government...."

5. "$194,252,000, of which not to exceed $3,000 shall be available for reasonable expenses related to promoting volunteer beach and marine clean-up activities:"

No specific authority

This provision is requested to allow MMS to pay for reasonable expenses in conjunction with organizing or sponsoring volunteer beach and marine clean-up activities.

6. "Provided, that and not withstanding section 5901(a) of Title 5, United States Code, as amended, the uniform allowance for each uniformed employee of the Minerals Management Service shall not exceed $400 annually:"

5 U.S.C. 5901(a)

This provision is requested to raise the current $125 maximum annual allowance for uniforms to $400.

7. "Provided further That, notwithstanding 31 U.S.C.3302 any moneys hereafter received as a result of the forfeiture of a bond or other security or payment of civil penalty by an Outer Continental Shelf permittee, lessee, or right-of-way holder which does not fulfill the requirements of its permit, lease, or right-of-way or does not comply with the regulations of the Secretary shall be credited to this account to cover the cost to the United States of any improvement, protection, or rehabilitation work rendered necessary by the action or inaction that led to the forfeiture or imposition of the civil penalty, to remain available until expended: Provided further, that any portion of the moneys so credited shall be returned to the permittee, lessee, or right-of-way holder to the extent that the money is in excess of the amount expended in performing the work necessitated by the action or inaction which led to their receipt or, if the bond or security was forfeited for failure to pay the civil penalty, in excess of the civil penalty imposed."

No specific authority

This provision is added to enable MMS to expend Government securities used as corporate surety bonds, in the event of default, to provide protective or rehabilitative work that is necessary due to the lessee's default.

DEPARTMENT OF THE INTERIOR
Minerals Management Service
Leasing and Royalty Management
Activity/Subactivity Change Crosswalk - FY 1990 President's Budget
(In thousands of dollars)

FORMAT OF FY 1990 CONGRESSIONAL BUDGET ACTIVITY/SUBACTIVITY	FY 1990 Estimate	FORMAT OF FY 1991 CONGRESSIONAL BUDGET ACTIVITY/SUBACTIVITY	FY 1990 Estimate
A. Outer Continental Shelf Lands		A. Outer Continental Shelf Lands	
(1) Leasing & Environmental Program	38,040	(1) Leasing & Environmental Program	37,978
(2) Resource Evaluation Program	22,124	(2) Resource Evaluation Program	22,042
(3) Regulatory Program	30,242	(3) Regulatory Program	30,136
Total, Outer Continental Shelf Lands	90,406	Total, Outer Continental Shelf Lands	90,156
B. Royalty Management		B. Royalty Management	
(1) Mineral Revenue Collections	18,284	(1) Mineral Revenue Collections	17,985
(2) Mineral Revenue Compliance	18,574	(2) Mineral Revenue Compliance	18,374
(3) Systems Development & Operation	18,359	(3) Systems Development & Operation	17,833
(4) Refunds to Indians	63	(4) Refunds to Indians	63
(5) Late Interest Payments	0	(5) Late Interest Payments	0
Total, Royalty Management	55,280	Total, Royalty Management	54,255
C. General Administration		C. General Administration	
(1) Executive Direction	3,531	(1) Executive Direction	4,731
(2) Administrative Operations	9,959	(2) Administrative Operations	10,034
(3) General Support Services	16,866	(3) General Support Services	16,866
Total, General Administration	30,356	Total, General Administration	31,631
Combined Total	176,042	Combined Total	176,042[1]

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[1] The 1990 column has been realigned to conform to the 1991 request, subject to Congressional approval of a reprogramming to transfer $1.2 million in 1990. The reprogramming would move $950,000 from the Royalty Management activity and $250,000 from the Outer Continental Shelf Lands activity to the Executive Direction subactivity.

DEPARTMENT OF THE INTERIOR
Minerals Management Service
Leasing and Royalty Management
Activity/Subactivity Change Crosswalk - FY 1990 President's Budget
(In thousands of dollars)

FORMAT OF FY 1990 CONGRESSIONAL BUDGET ACTIVITY/SUBACTIVITY	FY 1991 Estimate	FORMAT OF FY 1991 CONGRESSIONAL BUDGET ACTIVITY/SUBACTIVITY	FY 1991 Estimate
A. Outer Continental Shelf Lands		A. Outer Continental Shelf Lands	
(1) Leasing & Environmental Program	45,902	(1) Leasing & Environmental Program	45,840
(2) Resource Evaluation Program	22,586	(2) Resource Evaluation Program	22,504
(3) Regulatory Program	32,413	(3) Regulatory Program	32,307
Total, Outer Continental Shelf Lands	100,901	Total, Outer Continental Shelf Lands	100,651
B. Royalty Management		B. Royalty Management	
(1) Mineral Revenue Collections	20,262	(1) Mineral Revenue Collections	19,963
(2) Mineral Revenue Compliance	21,989	(2) Mineral Revenue Compliance	21,789
(3) Systems Development & Operation	20,293	(3) Systems Development & Operation	19,767
(4) Refunds to Indians	0	(4) Refunds to Indians	0
(5) Late Interest Payments	0	(5) Late Interest Payments	0
Total, Royalty Management	62,544	Total, Royalty Management	61,519
C. General Administration		C. General Administration	
(1) Executive Direction	4,109	(1) Executive Direction	5,309
(2) Administrative Operations	10,669	(2) Administrative Operations	10,744
(3) General Support Services	16,029	(3) General Support Services	16,029
Total, General Administration	30,807	Total, General Administration	32,082
Combined Total	194,252	Combined Total	194,252

Summary of Requirements

Appropriation: Leasing and Royalty Management

(Dollar amounts in thousands)

Summary of Base Adjustments	FTE	Amount	FTE	Amount
Appropriation Enacted, 1990	---	---	2,076	178,525
Reduction pursuant to P.L. 99-177	---	---	---	-2,483
Adjusted Appropriation, 1990	---	---	2,076	176,042
Base Adjustments:				
FERS and other Benefits	---	451		
One more Paid Day in FY 1991	---	361		
Rental payments to GSA	---	690		
Commercial Communication, Postage	---	170		
FY 1990 impact of P.L. 99-177	---	2,483		
Workers' Compensation payments	---	120		
Drug-Free work place	---	25		
FY 1991 Pay Raise Allowance	---	1,043		
Departmental Working Capital Fund	---	-20		
Administrative And Staffing Efficiency	-10	-1,078		
Total Base Adjustments	-10	4,245	-10	4,245
1991 BASE BUDGET			2,066	180,287

• Summary of Requirements

Comparison by	FY 1989 Enacted		FY 1990 Enacted to Date		PL 99-177 Reduction	FY 1990 Adjusted Appropr'n	FY 1991 Base		FY 1991 Estimate		Inc./Dec from FY 1990 Appropriation		Inc./Dec from FY 1990 Adj. Approp.		Inc./Dec from FY 1991 Base	
Activity/Subactivity	FTE	Amount	FTE	Amount	Amount	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
OCS LANDS																
Leasing & Environmental Program	363	38,063	337	38,515	537	37,978	335	38,692	335	45,840	-2	+7,325	-2	+7,862	---	+7,148
Resource Evaluation Program	345	22,759	346	22,354	312	22,042	344	22,504	343	22,504	-3	+150	-3	+462	-1	---
Regulatory Program	411	29,887	410	30,563	427	30,136	409	30,707	409	32,307	-1	+1,744	-1	+2,171	---	+1,600
Subtotal	1,119	90,709	1,093	91,432	1,276	90,156	1,088	91,903	1,087	100,651	-6	+9,219	-6	+10,495	-1	+8,748
Royalty Management																
Mineral Revenue Collections	293	16,924	292	18,243	258	17,985	292	18,654	294	19,963	+2	+1,720	+2	+1,978	+2	+1,309
Mineral Revenue Compliance	260	14,986	303	18,636	262	18,374	302	18,596	339	21,789	+36	+3,153	+36	+3,415	+37	+3,193
Systems Development & Operation	88	19,202	85	18,092	259	17,833	83	17,920	83	19,767	-2	+1,675	-2	+1,934	---	+1,847
Indian Refunds	---	---	---	64	1	63	---	64	---	---	---	-64	---	-63	---	-64
Interest on Late Payments	---	215	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Subtotal	641	51,327	680	55,035	780	54,255	677	55,234	716	61,519	+36	+6,484	+36	+7,264	+39	+6,285
General Administration																
Executive Direction	69	4,735	73	4,780	49	4,731	73	4,828	77	5,309	+4	+529	+4	+578	+4	+481
Admin. Operations	227	10,152	230	10,174	140	10,034	228	10,271	229	10,744	-1	+570	-1	+710	+1	+473
Gen. Support Services	---	13,822	---	17,104	238	16,866	---	18,051	---	16,029	---	-1,075	---	-837	---	-2,022
Subtotal	296	28,709	303	32,058	427	31,631	301	33,150	306	32,082	+3	+24	+3	+451	+5	-1,068
TOTAL REQUIREMENTS	2,056	170,745	2,076	178,525[1]	2,483	176,042	2,066	180,287	2,109	194,252	+33	+15,727	+33	+18,210	+43	+13,965

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[1] See Footnote on page MMS-22

Justification of Adjustments to Base

LEASING AND ROYALTY MANAGEMENT

	FTE	Amount ($000)
Adjustment for 1990 Effect of P.L. 99-177..........................	---	+2,483

The Balanced Budget and Emergency Deficit Control Reaffirmation Act (P.L.99-177) required a reduction in non-exempt programs in FY 1990 Since the reduction applies to FY 1990 only, this adjustment is made to allow a more comparable basis for showing program changes from FY 1990 to FY 1991. Restoration of these funds will be applied to new (60 percent of the January 1991 pay increase) and continuing (annualization of the January 1990 pay increase) pay act absorption requirements in FY 1991.

	FTE	Amount ($000)
Adjustment for Administrative Efficiency.........................	---	- 660

The Department is proposing to decrease spending for consultants, travel, overtime, supplies, and equipment by about 5 percent to improve administrative efficiency and place greater priority on 1990 program initiatives. Specific reductions are proposed in the following areas:

Consultants...............	-$ 31,000
Travel....................	- 201,000
Overtime..................	- 18,000
Supplies..................	- 108,000
Equipment.................	- 302,000
Total..............	-$ 660,000

	FTE	Amount ($000)
Adjustment for Staffing Efficiency................................	-10	- 418

Savings are proposed from a planned reduction in the average grade achieved by filling vacant positions at an average of one grade lower than previously filled and from taking into account an expected additional lapse of 30 days before filling positions that become vacant in FY 1991. Specific reductions follow:

Average Grade.............	-$ 184,000
Lapse.....................	- 234,000
Total...............	-$ 418,000

This estimate of the number of FTEs that will be saved by refraining from filling expected vacancies for one month longer than normal. The number of vacancies was determined by using an average attrition rate of 5 percent applied to the 1991 FTE usage.

	FTE	Amount ($000)
Additional cost in 1991 of the 1991 pay raise......................	---	+1,043

The adjustment is for the additional amount needed in 1991 to cover 40 percent of the additional three quarters' cost of the estimated 3.5 percent pay raise effective in January 1991. Of this amount $1,042,000 is for the general schedule pay and $1,000 is for the wage board pay. The 1991 cost of the remaining 60 percent will be absorbed in FY 1991.

	FTE	Amount ($000)
Rent payments..	---	+690

This adjustment reflects increased costs payable to the General Services Administration (GSA) resulting from higher rates for office and non-office space, increased costs in rent payments to others, and the cost resulting from the net change in the square footage and types of space occupied nationwide.

	FTE	Amount ($000)
Commercial communications..................................	---	-50

This adjustment is for the operations and maintenance contract for the Rolm switch located in Herndon Virginia.

	FTE	Amount ($000)
Workers' Compensation payments.............................	---	+120

This adjustment is for increased costs for compensation to injured employees to be paid to the Department of Labor, Federal Employees Compensation Fund, pursuant to 5 U.S.C. 8147(b), as amended by Public Law 94-273.

	FTE	Amount ($000)
Departmental Working Capital Fund..........................	---	- 20

The adjustment is for decreased costs assigned to the bureau for administrative services provided on a Department-wide basis (-$40,500). In FY 1991, costs for the Washington Interagency Telecommunications System (WITS), the GSA-provided computerized telephone system for the Interior Complex and the Department's in-house data interface/transport system, will decrease. Major acquisition and start-up costs for WITS will occur in FY 1990, with reduced costs in 1991 related primarily to maintenance. This reduction will be partially offset by adjustments for safety management and printing, miscellaneous working capital fund adjustments (+$2,000), FTS (+$4,000), and PAYPERS (+$14,000).

	FTE	Amount ($000)
FERS and other Benefits....................................	---	+451

This adjustment is for the increase in estimated retirement costs resulting from the continuing growth in the relative proportion of FERS employees in the bureau work force and the increase in the Government's cost of other benefits.

	FTE	Amount ($000)
One More Pay Day in FY 1991....................................	---	+361
The increase in personnel compensation results from there being one more pay day in FY 1991 than in FY 1990.		
Mail Services..	---	+120
This adjustment is for the increase in the volume of mail and postage rate, overnight mail, maintenance of mail metering equipment, and the Denver mail contract.		
Drug Free Workplace..	---	+25
The adjustment is for increased costs of fostering a drug free workplace.		
TOTAL BASE CHANGES	-10	+ 4,245

Activity: Outer Continental Shelf Lands

(In thousands of dollars)

Subactivity	FY 1989 Actual	FY 1990 Approp Enacted	FY 1990 Adjusted Approp	FY 1991 Base	FY 1991 Estimate	Inc.(+) Dec.(-) from Base
Leasing & Environmental Program	38,063	38,515	37,978	38,692	45,840	+7,148
Resource Evaluation Program	22,759	22,354	22,042	22,504	22,504	---
Regulatory Program	29,887	30,563	30,136	30,707	32,307	+1,600
Total Requirements	90,709	91,432[1]	90,156	91,903	100,651	+ 8,748

Authorizations

43 U.S.C. 1331, et. seq.	The Outer Continental Shelf Lands Act of 1953, as amended, extended the jurisdiction of the United States to the Outer Continental Shelf (OCS) and provided for granting of leases to develop offshore energy and minerals.
43 U.S.C. 4321, 4331-4335, 4341-4347	The National Environmental Policy Act of 1969 required that Federal agencies consider in their decisions the environmental effects of proposed activities and that agencies prepare environmental impact statements for Federal projects having a significant effect on the environment.
16 U.S.C. 1451-1464	The Coastal Zone Management Act of 1972, as amended, established goals for ensuring that industry activity in the coastal zone is consistent with coastal zone plans set by the States.
16 U.S.C. 1531-1543	The Endangered Species Act of 1973 established procedures to ensure interagency cooperation and consultations on endangered and threatened species.

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[1] See Footnote on page MMS-22.

16 U.S.C. 470-470w6	The National Historic Preservation Act established procedures to ensure protection of significant archaeological resources.
30 U.S.C. 21(a) 30 U.S.C. 1601 et.seq.	The Mining and Minerals Policy Act of 1970 and the Materials and Minerals Policy, Research and Development Act of 1970, set forth the continuing policy of the Federal Government, in the national interest, to foster and encourage private enterprise in the orderly and economic development of domestic mineral resources and reserves. MMS is responsible for the assessment of oil, gas, and management of the exploration and development of OCS leases.
43 U.S.C. 1301	The Marine Protection, Research, and Sanctuaries Act of 1972 provided that the Secretary of Commerce must consult with the Secretary of Interior prior to designating marine sanctuaries. MMS provides information regarding the mineral resource potential in areas being considered for designation as marine sanctuaries.
16 U.S.C. 1361-1362, 1371-1384, 1401-1407	The Marine Mammal Protection Act of 1972 provides for the safeguard of marine mammals which are, or may be, in danger of extinction or depletion as a result of man's activities.

The Outer Continental Shelf Lands budget finances the classification and evaluation of OCS resources, environmental studies and assessments, the management of energy and mineral leases by regulating exploration, development, and production on Federal OCS lands in an environmentally sound manner. The budget for the program is described in three subactivities entitled: Leasing & Environmental Program; Resource Evaluation Program; and Regulatory Program. Each subactivity represents an integral component of a highly coordinated program.

Justification of Program and Performance

Activity: Outer Continental Shelf Lands
Subactivity: Leasing and Environmental Program

(Dollar amounts in thousands)

Program Element		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc.(+) Dec.(-) from Base
Environmental Studies		$ 21,565	21,028	21,235	27,410	+6,175
	(FTE)	(---)	(---)	(---)	(---)	(---)
Leasing & Environmental Assessment		$ 16,950	16,950	17,457	18,430	+973
	(FTE)	(337)	(337)	(335)	(335)	(---)
Total Requirements		$ 38,515[1]	37,978	38,692	45,840	+7,148
	(FTE)	(337)	(337)	(335)	(335)	(---)

Impact of Public Law 99-177

(In thousands of dollars)

FY 1990 Enacted To Date	P.L. 99-177 B. A. Cancellation	FY 1990 Adjusted Appropriation
38,515[1]	-537	37,978

Reductions of $537,000 from the FY 1990 Leasing and Environmental base level will impact the Environmental Studies budget by eliminating funding for some new study starts in areas included in the current 5-Year Plan. The budget reduction will result in the delay until 1991 of a study in the Gulf of Mexico dealing with the occurrence and distribution of chemosynthetic communities. In addition, first-year costs for the Texas-Louisiana Shelf Circulation and Transport Process Program will be reduced by delaying the start of the field program. While these delays (approximately 12 and 6 months, respectively) are undesirable, they will not cause irreparable damage to the Environmental Studies effort in the Gulf of Mexico.

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[1] See Footnote on page MMS-22.

Environmental Studies

Objectives:

To conduct a studies program that:

- Plans and initiates scientific investigations to contribute to a basic and broad scope understanding of the marine environment in OCS areas;
- Integrates new and existing data to provide assessments of the effects of oil and gas activities in terms of environmental and socioeconomic impacts;
- Provides information leading to means to lessen or remove adverse impacts and insure safe operations;
- Is designed to provide information for consideration in the development of the 5-Year OCS Oil and Gas Program and for individual leasing proposals; and
- Provides data to help monitor postlease OCS oil and gas and other mineral operations.

Program Description

The resources of the Environmental Studies (ES) Program were initially devoted to prelease decisions involving the prediction and assessment of environmental impacts of OCS oil and gas operations. This strategy was based on the need for this information in the numerous frontier regions existing during FY 1973-1977 and on the limited areas in which to conduct well-defined monitoring studies. Since its inception in 1973, the program has supported prelease studies in all areas on the OCS leasing schedules. The program has produced a significant amount of relevant information on environmental and socioeconomic characteristics of currently proposed leasing areas. This information is used to characterize the existing environment and in the analyses of risks and benefits of OCS leasing as required by Section 18 of the OCSLAA and in the production of sale-specific and programmatic Environmental Impact Statements (EIS's), Secretarial Issue Documents (SID's), and other decision documents.

In 1980, the Environmental Studies Program began to invest an increasing proportion of its funds in issues related to postlease management decisions. Such redirection could be taken because the number of studies required in frontier areas had decreased, most lease areas had several years of completed study, and opportunities for scientifically credible monitoring experiments became available.

Studies related to interpretation of postlease impacts now constitute the majority of studies in the program, except in certain frontier areas. These studies focus on possible long-term, low-level impacts which, if present, remain to be more clearly defined. In addition, studies are concentrated in areas where industry interest or prospects are high, and are sensitive to the timing of development and production activities. Increasing emphasis is also being directed to the socioeconomic impacts of oil and gas activities.

In 1991 the Environmental Studies program will once again be redirected to reflect the changing priorities of the program. The ES program is a critical part of the MMS evaluation and decision making process. This process will determine which areas are environmentally acceptable for potential leasing. In a very real sense the ES program will be of critical importance in providing technical and scientific input concerning the development of mineral and hydrocarbon resources in the nation's Outer Continental Shelf area.

As each study is completed, its results are evaluated and used in the planning of future proposed sales, permitting actions, and, if appropriate, additional studies. MMS has also undertaken initiatives to analyze and evaluate the status of selected research topics. MMS's goal is to focus on issues which will benefit from continued study, and decrease funding in those areas where little benefit would result from further effort.

At present, particular emphasis is being given to endangered species issues in Washington/Oregon, fisheries studies and long-term monitoring and ecosystem studies in several regions, physical oceanography in the Gulf of Mexico and synthesis and evaluation reports for selected topics. The basic data collection in frontier areas not previously studied is also supported. The goal of maximum use and availability of existing information has also led to development of initiatives in information and data management.

The Environmental Studies Program is designed to support both regional and national information needs. These needs are assessed every two years through the development of study plans, which are then updated annually. These plans are developed in close consultation with the Regional Technical Working Groups. During FY 1991, regional offices will review and update the FY 1991/1992 regional study plans for studies to be procured in FY 1992. Development of these updates requires several months from initiation to final approval, including extensive coordination.

During the annual formulation of the National Study List, regional needs are combined with national needs and ranked in order of their importance to decision makers. Studies are ranked using a set of criteria based on a system developed for the program. MMS is assisted in defining nationally important information needs by the OCS Advisory Board through its technical and Scientific Committee.

The ranking system emphasizes the following criteria:

- Importance of the information to the decision maker, and

- Timing of the management decision for which the study is designed.

However, the following considerations also influence study selection:

- Generic applicability of study results,

- Availability of information in the subject of the study, and
- Applicability of the study to issues of regional or programmatic concern.

Recent activities and accomplishments for this program element include:

- Subsequent to the EXXON VALDEZ tanker spill, the Environmental Studies Program responded rapidly to support researchers in the field conducting immediate response sample collections and field observations which would not otherwise have been undertaken. Staff also participated in field activities collecting seabird and marine mammal observational data and worked in sea otter and seabird rehabilitation centers.
- A multiyear study was initiated late in FY 1988 to document the chemical and biological impacts resulting from OCS produced waters discharged in Louisiana coastal areas.
- To further our understanding of the long-term effects of a coastal oil spill and the time needed for recovery, a project initiated late in FY 1989 will collect field data and compare results with data collected 20 years ago in West Falmouth Bay, Mass.
- A symposium addressing the long-term effects of oil and gas activities in the Gulf of Mexico was sponsored by the Environmental Studies Program in FY 1989. Results of the symposium are to be used in implementing a multiyear program of field study designed to monitor the long-term impacts associated with offshore oil and gas development and production in the Gulf of Mexico.
- A major conference, co-sponsored by MMS, was held in October 1989 to develop a coastal ocean prediction program based upon field sampling and modeling. Recommendations developed during this conference will be used as a guide for future studies in the OCS.
- A circulation model of the Gulf of Alaska, Bering Sea, and Beaufort Sea is under development in a multi-year contract. A major part of the effort is directed towards coupling ice and wind models to the ocean circulation model.
- A high resolution circulation model for the U.S. Atlantic coast is under development which incorporates Gulf Stream dynamics. An important aspect of this investigation is the use of field data and modeling products to better define the environmental conditions in the model.
- The Gulf of Mexico OCS Region will be managing a major physical oceanographic study of the northwestern quarter of the Gulf of Mexico. The objectives of this study will be to identify key dynamic processes governing circulation, transport, and cross-

shelf mixing on the Texas and Louisiana shelf.

- A major study of an oil spill from a refinery in Panama which affected a coastal research facility of the Smithsonian Institution is now in its fourth year, and will continue for one more year. This spill is unique in that it affected an area of coral reefs, mangroves, and seagrass beds for which the Smithsonian had a significant amount of pre-spill data. This effort represents one of the best opportunities to document oil spill impacts in a tropical coastal environment.

- A major conference and workshop were held in May 1988 in Portland, Oregon, for the purpose of developing recommendations for studies related to offshore oil and gas activities in Washington and Oregon. A smaller workshop was held in March 1988 to evaluate the present database available in terms of the physical oceanography off the coasts of Washington and Oregon. Final results, obtained in FY 1989, have been used to plan future marine ecology, fisheries, and physical oceanography studies in that area.

- A multiyear field study was continued in the Mississippi-Alabama shelf area to characterize the OCS, describe current movements, and survey topographic features. In FY 1990, the primary focus of this study is on areas of significant topographic relief known as Pinnacles. The outer shelf area has surprisingly more topographic relief and fisheries resources than was previously known to exist.

- The Santa Barbara Channel Field Study and Model was completed. It should be noted that this was the first major physical oceanography experiment in which field personnel and modeling personnel worked together jointly during the design and implementation of the field program and subsequent modeling effort. The model will be further refined under a present Pacific modeling contract.

- As an adjunct to a general characterization of deep water biological communities in the Gulf of Mexico, a project is underway to better define the potential for impact, by oil and gas activities, on recently identified chemosynthetic communities.

- Several initiatives addressing fisheries issues in the Pacific OCS Region which began in FY 1988 were continued in FY 1989 and FY 1990. One study will provide MMS with information on species composition, local distribution movements, and abundance of fish species associated with offshore rocky reef habitats. A second will modify and expand a computerized fisheries data base system to include information for the entire Pacific Region, and provide product compatibility with efforts ongoing within the states of Washington, Oregon, and California. See Table 1 for additional information.

Increase from FY 1991 Base:

(Dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
$	21,235	27,410	+6,175
(FTE)	(---)	(---)	(---)

OCS Environmental Studies Program (+$2,600,000)

An increase of $1,600,000 is requested to support initiation of new studies required for any oil and gas lease sale decision in those offshore areas where the public have continuing concerns about the environmental effects of leasing or development. The studies will provide additional information for MMS leasing decisions concerning offshore oil and gas activities. Because of the contractual obligation on future fiscal year funds to complete multi-year studies, the Environmental Studies Program (ESP) is limited in its ability to react quickly to demands for priority studies in controversial areas, e.g., offshore the States of Alaska, Washington, Oregon, Florida, California, and North Carolina. This inability to address more fully, Federal, State, and public concerns of potential environmental impacts related to offshore oil and gas activities leads to greater confusion and uncertainty about offshore plans for certain areas. In the planning for these increased efforts, the ESP will consider recommendations and guidance received from the OCS Scientific Committee and the various task forces. The Report released November 3, 1989, by the National Academy of Sciences further emphasizes the need for increased studies. The expanded outreach effort, to resolve conflicts early in the leasing process, will put increased demands on the ESP for the collection of data concerning specific issues. Funds are included to cover these anticipated requirements.

$1,000,000 of this increase is to fund five environmental studies which were delayed in FY 1990. In FY 1990, an adjustment to the President's Budget redistributed $1 million from the Environmental Studies Program (ESP) to the Technology Assessment and Research Program. This redistribution included $500,000 from the ESP base and $500,000 from a planned FY 1990 increase. The redistributed $1 million is for the MMS FY 1990 share of a jointly-funded enhanced oil spill containment and cleanup technology research program. This program was initiated in FY 1989 subsequent to the Prince William Sound tanker spill and other tanker spills in order to improve the response to possible future spills.

This funding redistribution from the ESP meant that four studies would be delayed and deferred until FY 1991 and a fifth was reduced in scope for the first year. Those five studies are:

1. Exploratory Rig Monitoring Program, Eastern Gulf of Mexico
2. Northern Gulf Habitat Mapping
3. Potential Influence of Environmental and Industrial Factors on Bowhead Whale Hunting

4. **Petroleum Discharges into Alaskan Waters**
5. **Ecological Studies of Walrus and Endangered Grey Whales in the Chukchi Sea, and Walrus in Norton Sound**

Distribution of change by object class

The object class detail for the proposed change is as follows:

	Amount ($000)
Other Services..	+2,600
Total..	+2,600

Global Change Research (+$3,575,000)

In early 1989, the President recommended a strategy for addressing the nation's interrelated concerns of ozone depletion, climate warming, sea level change, drought, deforestation, desertification, and reduction in biodiversity. In response to his recommendation, an interagency group called the Committee on Earth Sciences (CES) outlined the U.S. Global Change Research Program in a report entitled, Our Changing Planet: The FY 1990 Research Plan. The DOI has initiated a series of meetings to determine its ability to assist in the research program which is designed to monitor, understand, and ultimately predict the effects of global climate change.

The world's oceans figure prominently in this research program because of their moderating influence on climate changes. The highest science priorities include: an increased understanding of ocean circulation, ocean mixing, heat flux, air/sea interactions, temperature and ocean circulation effects on biogeography and larval dispersal, effects of eddy motions on food availability and population recruitment. MMS is in a position to make a strong contribution to an increased understanding of climate change through our environmental studies of the Outer Continental Shelf.

The MMS Environmental Studies Program has put forward two proposals which address some of these high priority concerns dealing with the marine environment and its role in global climate change. A third proposal is the MMS share of the Department's development of a data base and models. These proposals are related to ongoing studies currently being planned for or underway in the MMS Environmental Studies Program. The following paragraphs summarize the research goals and methodology of each proposal.

Indices of Global Climate Change in the Gulf of Mexico ($1,535,000): This project would examine all existing long-term data bases of hydrographic properties in the Gulf of Mexico (including data from coastal waters, estuaries and ports) and monitor certain hydrographic properties and indicators of air-sea interaction to detect evidence of climate change. A major goal of the research would be to synthesize these resulting data and other data from concurrent MMS studies into numerical ocean circulation models. The earliest detectable sub-mixed layer expression of global temperature change may arise in the Gulf of Mexico, well before the lagged response of the deep ocean.

Marine Arctic Indicator Species Studies ($1,540,000): This study (MAISS) will build upon established (up to 10-years) monitoring programs for key indicator species, including bowhead whales, ringed seals, and marine colonial seabirds/water fowl in the Arctic. MAISS-1 is an expansion of the current program which will enhance the resolution, scales, and frequency of existing data bases. These activities will be coordinated with other programs sensing physical parameters (including sea ice, solar input, cloud cover, marine and atmospheric temperatures, CO_2, etc.) and certain biogeochemical factors (e.g., marine chlorophyll) to enhance the linkages between their respective data sets. MAISS-2 would statistically analyze trends, and correlate relationships of population and physical data. Results would be used to predict the effects of global climatic change on sensitive species, explain, and understand climatic linkages to bowhead whale, ringed seal, and marine avian species. MAISS-3 would design a predictive system for indicator species parameters. Key emphasis would include coupling to existing MMS models of human-induced environmental stress. Simulations and sensitivity analyses would compare global climate scenarios with other human-induced changes on bowhead, ringed seal and marine bird distributions and abundances.

Departmental Data Base and Modeling ($500,000): In support of the Administration's efforts to address global change, funding is requested for a series of studies to examine the social, environmental, and economic consequences of global change, and of any actions dealing with such change, as related to Interior decisions and policies for the land and resources for which it has stewardship responsibility. This funding will assist the Department in developing methodologies to estimate these social, economic and environmental consequences by developing both a data base and models relating such consequences to global change.

Distribution of change by object class

The object class detail for the proposed change is as follows:

	Amount ($000)
Other Services	+3,575
Total	+3,575

Table 1 - FY 1991 Environmental Studies

Region and Type of Activities	Study Categories								Remarks
	END. SP.	POLL. TRANS.	MAR. ECOL.	MONITOR.	F. & E.	SOCIO-ECON.	METEOR.	OTHER	
ATLANTIC									Continue studies of endangered whales; effects of oil and gas on recreation and tourism, compile baseline data on south Florida; and field studies on circulation patterns to support oil spill trajectory analyses.
Prelease Activities	X	X	X		X	X			
Exploration Activities		X		X	X				
Production & Development Activities	X	X	X	X	X	X			
GULF OF MEXICO									Continue oil spill trajectory modeling and physical oceanography; evaluate OCS operations on protected species; socioeconomic analyses; regional ecosystem characterizations in developed regions; initiate monitoring studies of long term effects of production.
Prelease Activities	X	X	X	X	X	X			
Exploration Activities				X					
Production & Development Activities	X	X	X	X	X	X	X		
PACIFIC									Continue field monitoring to evaluate chronic OCS discharge impacts; collect fisheries data; continue study to define physical oceanography of N.&C.CA.; collect and analyze existing info for WA/OR with emphasis on protected species.
Prelease Activities	X	X	X	X	X	X	X		
Production & Development Activities		X	X	X	X	X	X		
ALASKA (Gulf of Alaska)									Update information base developed for prior offerings in this area; reconnaissance of commercially important organisms.
Prelease Activities			X						
ALASKA (Bering Sea)									Continue to develop reconnaissance info on endangered species, biological communities, & physical oceanographic features; monitor effects of OCS operations on whales, native communities, and fishing resources; evaluate hazards to operations posed by sea ice.
Prelease Activities	X	X		X	X	X			
ALASKA (Arctic Ocean)									Continue monitoring effects of OCS operations on Bowhead whales, other marine mammals, and native populations. Study sea ice hazards on operations and pollutant transport by ocean features and sea ice.
Prelease Activities	X	X		X	X	X			
Exploration Activities	X			X	X				
Production & Development Activities				X					
Programmatic Studies					X	X		X	Continue to improve program quality and integrity; manage info transfer; develop consistent socio-econ and environment data for 5-year schedule; design and coordinate monitoring programs.

Leasing and Environmental Assessment

Objectives

- To promote responsible stewardship of OCS resources through a comprehensive foundation of environmental and socioeconomic information.
- To assess the extent and the location of the oil and gas resources of the OCS through the acquisition and analysis of scientific information.
- To preserve, protect, and develop the resources of the OCS in a manner consistent with the need to balance orderly energy resource development with protection of the human, marine, and coastal environments.
- To provide affected States, and through such States affected local governments, with opportunities to participate in policy and planning decisions relating to leasing, exploration, development, and production of energy and minerals on the OCS.
- To ensure that leasing and permitting actions are in accordance with all Federal environmental laws and that required coordination with Federal and State agencies occurs, such as for endangered species, archaeological resources, and coastal zone management.

Program Description

The primary functions of the Leasing and Environmental Assessment Program are to:

- Provide a comprehensive foundation of environmental, socioeconomic and resource assessment information to manage the OCS energy and mineral resources consistent with the need to balance orderly resource development with protection of the human, marine, and coastal environments;
- Develop a balanced OCS 5-year oil and gas program process pursuant to the purposes and authorities granted by the OCS Lands Act;
- Determine size, timing, location, terms and conditions for any leasing proposal which provide a reasonable balance between the national interest and the well-being of the citizens of each affected State; and to consult and communicate with the Governor of each affected State for any determination vis-a-vis the Governor's recommendations; and
- Review and assess the environmental and socioeconomic impacts associated with permits issued under the Resource Evaluation and Regulatory Program.

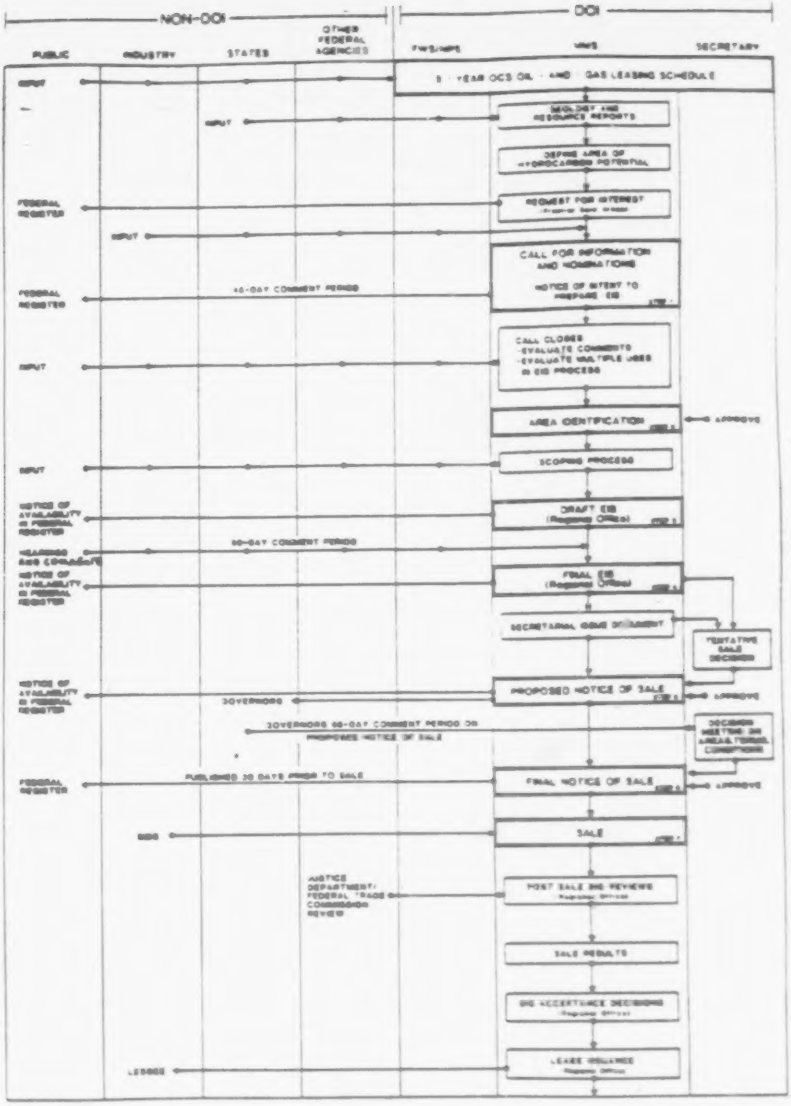
Major tasks of this program are active coordination and consultation with other Federal agencies, affected State and local governments, the scientific community, and the public. These tasks occur throughout the development of the broad-based environmental and hydrocarbon information base needed for responsible stewardship of the OCS resources, the 5-year planning process, and the prelease process. Figure 1 depicts the coordination and consultation steps used in the development of a lease sale proposal. Additionally, the activities required to develop OCS strategic and critical minerals leasing procedures and to expand the information base for potential future minerals development on the OCS will continue to be studied and evaluated.

The Leasing and Environmental Assessment Program relies on continuous involvement with State and affected local governments, other Federal agencies, industry and public interest groups in the development and conduct of the program. The information transfers between these parties and the Department help the Secretary to achieve consensus on design and timing of lease sale proposals, and promote early resolution of issues and concerns (e.g., public scoping meetings, comments on EIS's, endangered species consultations, and EIS hearings).

The Environmental Studies Program's information base acquisition focuses on numerous scientific and environmental effects including monitoring and addressing potentially subtle effects of long-term, low-level pollution and cumulative effects in concert with other impacts occurring on the OCS. A considerable amount of basic environmental data and applied oil and gas information have been collected over the 17 years of the Studies Program resulting in increased efforts to manage the data, effectively disseminate results, and share the raw data. MMS has initiated a Long-Range Studies Plan to be released for public comment.

The contentious nature of the oil and gas leasing portion of the offshore minerals management program has required the examination of numerous new methods to resolve issues. Examples have included the formation of special joint Federal/State task forces concerned with leasing proposal issues, extensive negotiated rule making efforts, special studies by the National Research Council to evaluate technical information for various areas, and several other similar activities. In many respects, each effort has been an unique response to views expressed by various interest groups. The timing, subject matter, and interested parties in these matters are often difficult to predict. Experience indicates that different methods for addressing various concerns will continue to be required. Greater efforts are needed to work with various local coastal community public interest groups to better understand their concerns and to assure that they have information necessary to allow them to better understand the benefits and risks associated with the program. This sharing of information is essential to finding ways of mitigating public concerns and allowing the program to fulfill its mandated energy, environmental, safety, and economic objectives.

Pre-Lease Process


NON-DOI
DOI
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INDUSTRY
STATES
OTHER FEDERAL AGENCIES
FWS/NPS
MMS
SECRETARY
INPUT
5 - YEAR OCS OIL - AND - GAS LEASING SCHEDULE
INPUT
GEOLOGY AND RESOURCE REPORTS
DEFINE AREA OF HYDROCARBON POTENTIAL
FEDERAL REGISTER
REQUEST FOR INTEREST
INPUT
CALL FOR INFORMATION AND NOMINATIONS
NOTICE OF INTENT TO PREPARE EIS
FEDERAL REGISTER
45-DAY COMMENT PERIOD
INPUT
CALL CLOSES
-EVALUATE COMMENTS
-EVALUATE MULTIPLE USES IN EIS PROCESS
AREA IDENTIFICATION
APPROVE
INPUT
SCOPING PROCESS
NOTICE OF AVAILABILITY IN FEDERAL REGISTER
DRAFT EIS (Regional Office)
HEARINGS AND COMMENTS
60-DAY COMMENT PERIOD
NOTICE OF AVAILABILITY IN FEDERAL REGISTER
FINAL EIS (Regional Office)
SECRETARIAL ISSUE DOCUMENT
TENTATIVE SALE DECISION
NOTICE OF AVAILABILITY IN FEDERAL REGISTER
PROPOSED NOTICE OF SALE
APPROVE
GOVERNORS
GOVERNORS 60-DAY COMMENT PERIOD ON PROPOSED NOTICE OF SALE
DECISION MEETING ON AREAS, TERMS, CONDITIONS
FEDERAL REGISTER
PUBLISHED 30 DAYS PRIOR TO SALE
FINAL NOTICE OF SALE
APPROVE
BIDS
SALE
JUSTICE DEPARTMENT/ FEDERAL TRADE COMMISSION REVIEW
POST SALE BID REVIEWS (Regional Office)
SALE RESULTS
BID ACCEPTANCE DECISIONS (Regional Office)
LESSEE
LEASE ISSUANCE (Regional Office)

Figure 1

MMS-42

The responsible stewardship of the oil and gas resources of the OCS program supports the Administration's goals of protecting the environment, reducing the Nation's reliance on insecure foreign oil sources, enhancing national security, and strengthening the Nation's economy. The OCS contributes significantly towards the achievement of these goals as it currently provides about 11 percent of domestic oil production and about 25 percent of domestic gas production in an environmentally sound manner.

Bonuses and rents paid for OCS leases and royalties from subsequent production have a positive effect on the Federal Budget. Approximately $2.9 billion was received in FY 1989 from bonuses, rents, interest, and royalties. Approximately $3.0 billion is estimated to be received in FY 1991. Of the FY 1991 amounts, royalty receipts from producing OCS leases are estimated to be $2.15 billion. Lease sale bonuses and rentals are estimated at $854 million.

Prelease and/or leasing activity on approximately 20 sales will be in progress during FY 1991 with 7 sales scheduled (see Table 2). Two sales proposed off California in FY 1990 and two in 1992 are on hold due to the Presidential Task Force while one in Washington-Oregon will require continuing extensive consultation in FY 1990. Continuing activity is scheduled in all three Atlantic planning areas, including preparation of a final EIS for the Mid-Atlantic planning area. In Alaska, the program entails work on follow-up sales for several Bering Sea sale areas including the holding of a sale for Navarin Basin, and the preparation of a draft EIS in the St. George Basin. In the Arctic area, lease sales are scheduled for the Chukchi Sea and Beaufort Sea planning areas. A Call will be issued for the Shumagin Basin in FY 1990. Meanwhile, planning steps are scheduled for four sales in the Gulf of Mexico.

The Alaska boundary project will be continued in FY 1991. This effort was initiated in FY 1984 because of long-term issues which continue to affect both State and Federal oil and gas leasing programs within the offshore submerged lands and on the OCS. When Federal/State boundary locations cannot be determined, disputes arise as to which governmental entity may lease lands near to and abutting the 3-geographical-mile line. In many areas around Alaska, the location of the 3-geographical-mile line boundary is not known. This situation exists because Alaska is remote and the costs of surveying are very high--up to $6,000 per mile in some coastal areas. In addition, tidal readings (datums) used to establish the baseline (from which the 3-geographical-mile line is measured) must be accumulated for approximately 20 years before that line can be determined. Without resolution of the boundary issue, Federal lease sales offshore Alaska might have to be cut back in terms of size, postponed, or not held due to litigation such as the ongoing Supreme Court case in connection with the Federal/State boundary along the Beaufort Sea.

Table 2

Minerals Management Service
Lease Sales

FY 1989 Actual

Sale Number	Area
116	E. Gulf of Mexico, Part I
118	C. Gulf of Mexico
122	W. Gulf of Mexico

FY 1990 Planned

Sale Number	Area
123	C. Gulf of Mexico
125	W. Gulf of Mexico

FY 1991 Planned

Sale Number	Area
107	Navarin Basin
---	Solid Minerals Sale, Norton Sound
124	Beaufort Sea
131	C. Gulf of Mexico
121	Mid-Atlantic
126	Chukchi Sea
135	W. Gulf of Mexico

For the purposes of presentation, the Leasing and Environmental Assessment Program has been divided into nine subelement groupings. It is important to point out, however, that the subelements are not independent. Each phase, step, or activity of the program is linked to and is interactive with other subelements. In most cases, individual staff members participate in many of the subelements.

Subelement 1 depicts the work effort involved with the administration of the Environmental Studies Program funded under the Environmental Studies program element, information that is needed in most of the other elements. The information provided under subelements 4 and 8 cover the major environmental thrusts of the program.

Under subelement 2, a discussion of the development and review of the 5-year program is provided. The activities included under subelements 3 and 5 are closely related but have been segregated to clarify the discussion. These sections provide information on the major processes followed and documents prepared which integrate hydrocarbon, environmental, and other critical information needed to define and make decisions to enhance the balanced development of the resources.

Subelements 6 and 7 discuss the lease sale, lease issuance and maintenance activities.

Subelement 9 discusses program management and support activities.

Also included are discussions of several program components which are not detailed in the discussion of the basic subelements. These discussions include: (1) Leasing area maps and diagrams which are used in various activities throughout the entire leasing process; (2) OCS Advisory Board coordination, which provides the Secretary and Director with expertise from States, the scientific community, the private sector, and the public; and (3) strategic and other minerals.

The nine major subelements of the Leasing and Environmental Assessment Program and their products are described below:

1. Management of Environmental Studies ($2,666,000)

   The Environmental Studies Program has continually evolved and changed to meet the needs of the OCS Program and the cumulative increase in information and understanding of the OCS environment. The program contributes to the basic and broad scope understanding of the environment in OCS areas, provides information for the development of the five year program leasing proposals, and for the safe operation of OCS oil and gas activities. As stated in the OCSLAA, the purpose of the Environmental Studies Program (ESP) is "...to establish information needed for prediction, assessment, and management of impacts on the human, marine, and coastal environments which may be affected by OCS oil and gas activities.... " The most recent changes, which respond to the final 5-year OCS program for the period from 1987 through 1992, include: (1) greater balance between prelease and postlease studies; (2) greater emphasis on generic studies; (3) development of a strategy for postlease monitoring studies; and (4) increased emphasis on summary reports and management of existing information. The management of this broad scale effort to enhance the understanding of the OCS environment requires a staff of highly knowledgeable environmental scientists.

The knowledge gained from the studies conducted under this program is used by the Department in making decisions on the balanced development of marine mineral resources. Many of the studies, while targeted for determining potential effects of oil and gas activities, result in the collection of fundamental data on the marine environment. Study results often contribute to the full range of environmental issues. The data are used in avoiding environmentally critical areas for inclusion in proposed leasing areas, analyzing environmental effects, formulating lease stipulations, modifying leasing and operating rules and regulations, and assessing effects of industry activities. Environmental studies are also designed to monitor the effects of hydrocarbon and other mineral exploration, and the effects of development and production activities. If potential adverse effects are discovered by these monitoring efforts, appropriate measures are taken to mitigate or change the expected effects by amending and modifying OCS regulations or by issuing Notices to Lessees and Operators (NTLs). When an environmental study in a specific geographical area indicates a need to further protect the environment, new or changed operating conditions may be imposed on existing and future leases.

Availability of the study data is the end result of a very complex and lengthy process. This process begins with an assessment of information needs and the biennial development of environmental studies plans with annual updates. MMS establishes and disseminates policy and guidance for the preparation of regional studies plans. This guidance includes interpretations of departmental policy and advice from the OCS Advisory Board's Scientific Committee. Regional studies plans are prepared with the assistance of the OCS Advisory Board's six Regional Technical Working Groups and other local advisors. These plans include statements of local information needs, the regional perspective on the priorities of these needs, cost estimates, and a brief description of each proposed study. A plan is developed which concentrates on identifying studies that address numerous scientific, economic and associated issues to better focus on areas where hydrocarbon development might proceed in an environmentally sound manner. MMS has also developed a Long-Range Studies Plan to be released as a draft report for public comment in early 1990. This document contains an analysis of available information pertaining to pertinent environmental issues. This analysis presents a national perspective and provides guidance to the Regions as to what kinds of studies will need to be undertaken by the Agency within the next 10 years.

Following development and approval of the regional studies plans, MMS compiles a preliminary National Studies List which includes all studies proposed for funding. Because the total cost of all studies nominated for funding during any fiscal year has historically exceeded available funds, criteria (discussed in the Environmental Studies program element) were designed to rank each study. This list of proposed studies and order of priority receives extensive and critical independent public, academic and private sector review.

The National Studies List serves as the basis for preparation of the annual advance procurement plan (required by Federal regulation) and execution of the procurement process which includes the following three major steps: (1) development of a procurement package by scientists who proposed and designed the particular study; (2) development of the solicitation which is completed by the MMS procurement staff; and (3) evaluation of proposals and award of the contract, responsibilities shared by the program and procurement staffs.

Once an award has been made for conduct of an environmental study, administration and monitoring of the contract begins. Program scientists perform these functions in their role as contract officer's technical representatives.

Reports resulting from the ESP are kept by the regional offices and headquarters for their use and copies are distributed to appropriate Federal and State agencies, libraries, National Technical Information Service and limited general distribution. MMS Regions hold scientific meetings on a regular basis to transfer up-to-date information to in-house staff, other government agencies, industry, and the interested public. These meetings take place as synthesis meetings for specific lease sales, technical workshops, and information transfer meetings. Professional environmental staff and principal investigators also attend national meetings and represent MMS at environmental and technical workshops sponsored by other Agencies. Numerous formal presentations of MMS-sponsored research occur annually at MMS, professional society, and other Federal meetings.

Description of Subelement Products

a. Regional Studies Plan

A regional studies plan is prepared biennially by the four regional offices and the headquarters office. These plans include statements of regional information needs, the regional perspective on the priorities of these needs, and a brief description of the rationale for each study. These plans are the basis for developing the National Studies List. They are updated at the end of the first year to reflect any changes in requirements.

b. National Studies List

The National Studies List is prepared each fiscal year and reflects the ranked list of studies to be funded under the Environmental Studies Program.

c. Procurement Package

A procurement package is developed for each study on the National Studies List. It includes: requisition; statement of work; independent government cost estimate; technical evaluation criteria; justification for noncompetitive procurement, if required; and the necessary funding approvals required by Federal regulation. The statement of work is the most important element in the procurement process. It is used to describe the Government's requirements, evaluate competing proposals to accomplish the work, guide or control the contractor's performance, and determine if the requirements are being satisfied.

d. Technical Proposal Evaluation

The basic purpose of the evaluation process is to determine which of two or more competing proposals should be selected for contract award or in the case of a single proposal, if the proposal is of adequate quality for contract award. The ultimate question to be answered is: Which proposal will be most advantageous to the Government, considering price and qualitative factors?" The evaluation process is conducted by a committee selected by the contracting and program officers and complies with the requirements of the Federal procurement regulations.

e. Contract Monitoring

Program scientists who assisted in design of the environmental studies are designated Contracting Officer's Technical Representatives (COTR). They are responsible for the technical administration and monitoring of the contracts. A COTR is authorized to perform the following tasks: (1) inspect and monitor contract performance to assure technical compliance with the specifications; (2) inspect and verify satisfactory delivery of all items; (3) verify efficient and satisfactory performance of work for payment purposes; and (4) furnish the contracting officer copies of all approved invoices, trip and conference reports, and general correspondence dealing with the administration and monitoring of the contract. The COTR also serves as an in house expert on studies in progress, where limited reports are available.

Recent activities and accomplishments for this subelement include:

o MMS is continuing several complementary reviews of the ESP to assess the long-term direction of the program. These include a major effort with the National Academy of Sciences (NAS) to review MMS information needs and the availability of information in topics such as marine ecosystems, physical oceanography, and socioeconomics. At the same time, MMS is completing a Long-Range Studies Plan that focuses on long-term commitments to obtain significant information on environmental and socioeconomic aspects of OCS development. Both efforts are intended to help MMS assess how well the ESP has met its goals and to identify where future studies efforts should lie.

- o MMS is implementing an aggressive policy of information management through the preparation of project summaries for all major studies funded through the program since 1973 and development of an improved computer indexing and reference retrieval system. This, combined with the ongoing information transfer meetings in each region, ensures that the scientific community has full access to this wealth of information. The first hardcopy publications in this effort, a comprehensive bibliography and the first volume in a series of technical summaries, was completed in Fiscal Year 1989. Efforts are also increasing to provide computer files of field data to other Agencies (State and Federal) working with marine environmental issues.

2. Development/Review of 5-Year OCS Program ($440,000)

The Secretary of the Interior is responsible for the preparation and maintenance of, and periodic revisions to, a 5-year program. He is required to balance the potential for environmental damage, the potential for the discovery of oil and gas, and the potential for adverse effects on the coastal zone. The program must be developed on the basis of a number of environmental, economic, and other factors which assure evaluation of the characteristics of each planning region, equitable sharing of developmental benefits and environmental risks, relative national and regional energy needs, relationships to other marine resource uses, relative environmental sensitivity and marine productivity, and other relevant information.

The program consists of a schedule of proposed lease sales, indicating the size, timing, and location of proposed leasing activity which the Secretary determines should be considered to best meet national energy needs for a 5-year period following its approval. In accordance with Section 18(e) of the amended OCS Lands Act, the Secretary is also required to review the leasing program at least once each year. He may revise and reapprove the program at any time in accordance with statutory procedures.

During the preparation of a proposed 5-year program, the Secretary of the Interior is required to invite and consider suggestions and relevant information from all interested parties, including Federal agencies, industry, and the Governor of each potentially affected State, and from the general public. These comments and/or suggestions are submitted in response to a request for information issued as a notice in the Federal Register. Comments are requested on the geographical, geological, and ecological characteristics of the broad areas under consideration, other uses of offshore resources and space, identification of areas of environmental sensitivity and marine productivity, and the technological feasibility of, time periods required for, and interest in offshore exploration and development. The Secretary also sends letters to the Governors of affected States, asking them to identify specific laws, goals, and policies they believe should be considered in connection with the leasing program. States that are developing or administering a coastal zone management (CZM) program are also requested to supply information concerning the relationship between their CZM programs and potential offshore oil and gas activity.

After considering comments and information received, a Draft Proposed Leasing Program is prepared. A copy is sent to the affected States at least 60 days prior to publication of a Notice of the Proposed Program in the Federal Register . Within 90 days after publication of the Proposed Program, comments and recommendations may be submitted on any aspect of the program. At least 60 days prior to approval, a Proposed Final Program is provided to the President and Congress, along with any comments received on the Proposed Program. This transmittal must indicate why any specific recommendations from the governor were not accepted. Sixty days after Congressional and Presidential notification, the Final Program is approved and published.

Recent activities and accomplishments for this subelement:

o In FY 1990, work continued on the development of the next 5-year OCS Program. On July 14, 1989, the Department of the Interior requested suggestions for the development of a new 5-year program with the publication of two Notices published in the Federal Register. Requests for suggestions were also made by means of letters to coastal State Governors, the heads of interested Federal agencies, and OCS Policy Committee members.

  - The issuance of the first program proposal, the draft proposed program, is scheduled for the spring of 1990 -- to provide time for incorporating the results of the decision process following the results of the President's Task Force on OCS Leasing and Development, scheduled for January 1990.

o After a 60-day comment period on the draft proposed program, MMS will develop options and revised analyses for the proposed program and draft EIS, to be issued in FY 1991.

o Identified measures for conflict resolution related to better working relationship with the coastal communities involved with OCS oil and gas leasing in the South Florida, North Atlantic and Washington-Oregon areas are as follows:

    - Efforts in Florida resulted in agreement by the State to withdraw its litigation against the 5-year program and provided a basis for agreement on terms and conditions for conduct of Part I of Sale 116 in the EGOM. Task Forces were established and met during FY 1989 to review information on oil spill risk and effects from drilling discharge. The reports of the task forces were completed in December 1989.

- Concerning the North Atlantic, the report of the National Research Council expected in February 1990 will be used on a long-term basis to explore possible alternatives to develop the resources in that area.

- Formally initiated in January 1989, the Pacific Northwest OCS Task Force, composed of representatives from the Governors of Washington and Oregon, Pacific Northwest tribal governments, and the Secretary, has met several times in FY 1990. The Task Force has accomplished milepost subtasks including establishing an operating agreement and deciding on nominations and protocol for a scientific subcommittee charged to provide scientific and technical expertise to the 5 steering committee members. We expect that the Task Force will continue to meet in FY 1991 and provide advice to the Secretary.

- o Prepared background materials and gave extensive verbal and written briefings to the Office of the Solicitor and the Department of Justice on the 5-year program litigation. Compiled and submitted an administrative record for the approved program. The Service provided comments on briefs and suggested responses to petitioners' briefs and issued a draft supplemental environmental impact statement for the 5-year program in response to litigation. The final supplemental EIS is scheduled to be issued in February, 1990.

- o Conducted Annual Review of the 5-year program as required by the OCS Lands Act.

- o Worked to implement recommendations of the OCS Policy Committee to the Secretary concerning improvements in the process for developing the next 5-year program.

- o Developed briefing materials and letters for use in congressional consideration of legislation affecting the 5-year program.

- o Initiated staff studies concerning marine productivity and environmental sensitivity to assess whether new methods and data should be used in the next 5-year program; initiated preliminary program assessment of the work plan, schedule, procedures, and methodologies for the next 5-year program.

3. Process to Determine 5-Yr Program proposals that will be analyzed in EIS ($558,000)

For proposed lease sales which have been identified in the 5-year leasing program, a detailed prelease process is followed by MMS. The objective of the initial steps in this process through the Area Identification (discussed below in detail) is to determine the leasing proposal area for further study in the environmental analysis process under the National Environmental Policy Act. This determination is made by the Department after ample opportunity for public and governmental involvement which considers all comments, concerns and expressions of interest received during the consultation process.

Following are discussions of the major workload areas of this subelement of the Leasing and Environmental Program:

a. Request for Interest

A request for interest may occur as a first prelease step. This is most likely to occur for lease sale proposals in frontier areas where there is limited industry interest. Such proposed sales were identified as frontier exploration sales during the development of the 5-year program. Industry's responses, along with other information, are used to determine if enough interest exists to begin the lengthy prelease process. In some regions, at the same time that the request for interest is issued, preliminary consultations may take the form of meetings and information exchanges with coastal States and members of Congress to discuss OCS concerns and issues. These meetings often require the development of specialized information (histories, statistics, briefing and option papers, graphics, and summaries) so the complex and technical activities of the offshore program can be adequately presented, reviewed, and evaluated.

A request for interest may be issued at any stage in planning for a proposed sale when it is believed that current economic or market conditions may have changed industry interest or changed the number of companies interested in exploring an area. The request to industry is published in the Federal Register, responses are analyzed, and a decision is made to proceed with, delay, or cancel the prelease process.

OCS PLANNING AREAS

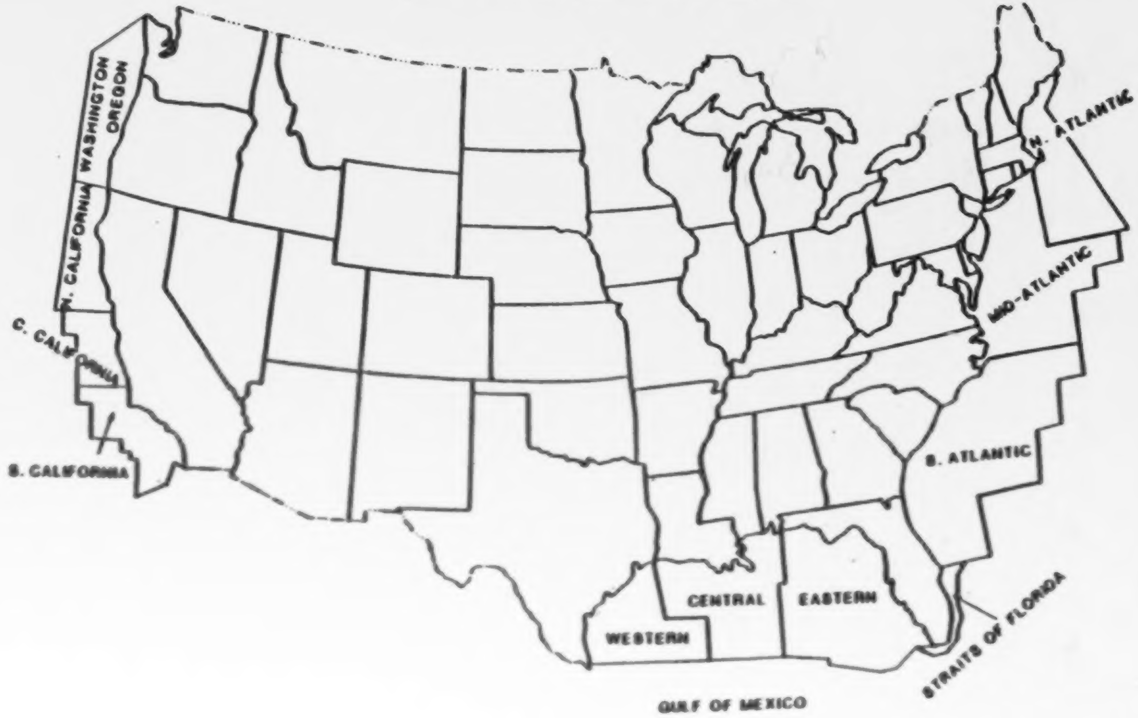
WASHINGTON
OREGON
N. CALIFORNIA
C. CALIFORNIA
S. CALIFORNIA
N. ATLANTIC
MID-ATLANTIC
S. ATLANTIC
STRAITS OF FLORIDA
EASTERN
CENTRAL
WESTERN
GULF OF MEXICO

Figure 2

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OCS PLANNING AREAS

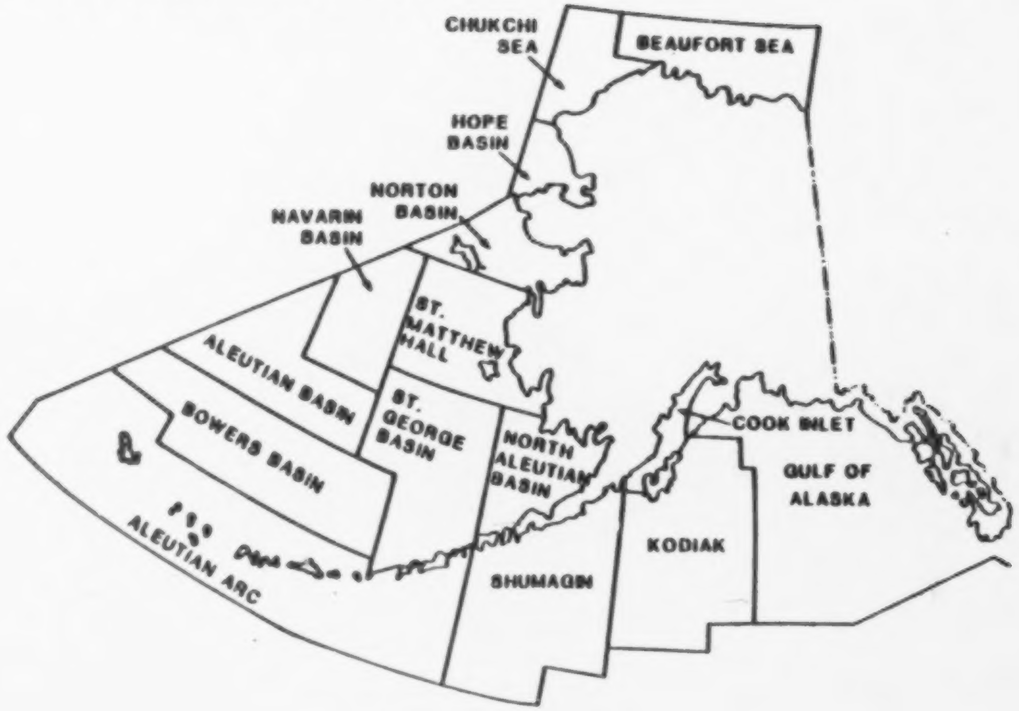
CHUKCHI SEA
BEAUFORT SEA
HOPE BASIN
NORTON BASIN
NAVARIN BASIN
ST. MATTHEW HALL
ALEUTIAN BASIN
ST. GEORGE BASIN
NORTH ALEUTIAN BASIN
BOWERS BASIN
ALEUTIAN ARC
SHUMAGIN
KODIAK
COOK INLET
GULF OF ALASKA

Figure 3

MMS-54

b. Call for Information and Nominations (Call)

The Call is a public participation and information-gathering step. It provides industry, the States, and the public with a formal opportunity to participate in the prelease process by submitting specific information (geological, biological, archaeological, socioeconomic, and technical) which might bear upon the potential leasing and development of particular areas proposed for lease (Figures 2 and 3). The comments are used in future decision making points in the leasing process. Also, during this step, consultation begins with the Department of Defense to identify possible multiple-use conflicts in the sale area, pursuant to a Memorandum of Agreement with the Department of Defense.

In the process used for focusing on promising acreage the Minerals Management Service highlights on a map issued with the Call for Information and Nominations its view of the promising acreage within the Call area. The text of the Call explains that while primary consideration would be given to the highlighted area, respondents may nominate any acreage within the Call area. Such nominations and comments will be considered at the Area Identification stage for identification of the proposal, which will be analyzed in the EIS.

Industry, States, local governments, public interest groups, and individuals respond to the Call, published as a Federal Register Notice. A Notice of Intent to prepare an Environmental Impact Statement (EIS) is issued with the Call. This initiates the scoping process, which is discussed under subelement 4 on the following pages. Industry identifies and ranks areas of potential for oil and gas development and provides information on sale terms and conditions. Government agencies and public respondents provide comments on the subjects listed above and on possible environmental conflicts. The resulting information is a direct input to the area identification step and is used in subsequent planning and analysis activities.

c. Area Identification

The purpose of this step is to identify the leasing proposal area that will also be further analyzed in the EIS. In preparation for the area identification decision, information received in response to the Call for Information and Nominations and other information such as that received during the development of the 5-Year Program is carefully reviewed. Industry provides priority information indicating the order in which it wants to explore areas and also nominates areas it would like to lease, identifying them as being of high, medium, or low interest. Information on environmental resources in the area of the leasing proposal is summarized and incorporated into the decision process. Information and comments provided in response to the Call by States, local governments, and public interest groups is also analyzed, summarized, and incorporated into the decision process.

Through the use of written material, briefings, and graphics, departmental decision makers are provided with information on industry interest; public concerns; State and local government positions; resource potential and geophysical and geologic conditions; environmental resources and conditions; multiple-use conflicts; past leasing history; recommendations on potential sale area configurations; and other relevant information. The concerns expressed by the public are addressed and the process of balancing the exploration for oil and gas with the need to protect the environment is continued.

Once area identification decisions are made, affected States and selected Federal agencies are provided with information regarding the area of the leasing proposal. Consultations are also initiated with States regarding potential boundary disputes in the leasing proposal area.

4. Environmental Assessment Process ($5,676,000)

The Minerals Management Service normally prepares an Environmental Impact Statement (EIS) and holds public hearings on this EIS before the Secretary of the Interior decides whether to hold an OCS lease sale proposed in the 5-year oil and gas program. These procedures comply with the requirements of the National Environmental Policy Act (NEPA). NEPA requires the preparation of an EIS before the conduct of any major Federal action which could significantly affect the quality of the human environment and specifies the basic information that the EIS shall include. In limited instances for small-scale proposed sales (such as proposed supplemental sales), an environmental assessment may be prepared to determine whether an EIS is needed.

The environmental analyses may be started as early as one year before the Call for Nominations with the development of general descriptive material. Following the Call for Information and Nominations and issuance of a Notice of Intent to prepare an EIS, the scoping process (required by CEQ regulations) begins. Scoping is the process of identifying the range and significance of important issues associated with a proposed Federal action and alternatives to that action through coordination and consultation with Federal, State, and local governments; the public; and any interested individual or organization before pursuing development of an EIS. Information gathered through the Environmental Studies Program, from ongoing exploration and development activities, and the Call for Information and Nominations, is also reviewed during the scoping process. This leads to the identification of major issues and alternatives to be addressed in the EIS and assists in the design of the sale proposal. Topics addressed in the EIS usually include effects of the leasing proposal on air and water quality, archaeological resources, endangered species, marine mammals, fisheries, areas of special biological concern, and onshore socioeconomics.

One of the most useful aspects of the environmental assessment process for proposed lease sales is the oil spill risk analysis. This is a computer modeling technique. The availability of adequate environmental data, such as that on wind and ocean currents, is an important factor in the model. The Environmental Studies Program provides for timely gathering and analysis of these data, as well as the examination of historical oil spill production and accident statistics. Oil resource estimates used in the model are provided by the Resource Evaluation Program. The model incorporates the best available physical oceanographic and meteorological data; estimated locations and potential volumes of oil projected to be produced and transported over the life of the proposed leases if commercial quantities of hydrocarbons are discovered and developed; the locations of environmental resources (e.g., fish spawning areas, recreational beaches, whale migration routes, etc.); potential transportation routes; and the likelihood of oil spills based on historical accident rates. The model provides a measure of the likelihood of oil spill occurrence, as well as the estimated mean trajectories of spills in relation to recreational and biological resources. To report model results, an oil spill risk analysis report is prepared for each EIS.

The development of mitigating measures appropriate to the pertinent environmental concerns is another important phase of the prelease NEPA process for specific leasing proposals. Lease stipulations and Information to Lessees clauses, which are implemented through work in the Regulatory Program, are developed in conjunction with the environmental analyses. Included is an analysis showing impacts to environmental resources assuming (1) that no mitigation is used, and (2) that the proposed mitigation is used. In this way, the efficacy of the proposed measures is apparent. These mitigating measures, in conjunction with the existing regulatory framework, have proven to be an effective and economical means of minimizing many potential adverse environmental effects while allowing the search for offshore oil and gas resources to proceed. Additionally, much of the analytical environmental work carried out at this stage provides background information that directly supports environmental analyses related to review and permitting of postlease activities.

Pursuant to Section 7 of the Endangered Species Act of 1973, the Minerals Management Service formally consults with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (FWS), as appropriate, if the proposed activity has the potential to affect an endangered or threatened species or harm its critical habitat. The Minerals Management Service provides NMFS/FWS with detailed background information on each leasing proposal and formally requests consultations and "Biological Opinions" on whether OCS mineral leasing or exploration in an area will jeopardize the continued existence of endangered or threatened species or destroy or adversely modify their habitat. The formal consultation process is associated with the preparation of the EIS and the information provided is factored into the EIS analysis and/or the lease-sale decision process. Additional consultation is undertaken as necessary as a part of the postlease environmental activities at the development stage. A Draft Environmental Impact Statement (DEIS) is filed with the Environmental Protection Agency (EPA) and released for public review about 8 months after the Area Identification. A Notice of its availability is published in the Federal Register, and the document is made available upon request.

Public Hearings are held in the vicinity of the area of the leasing proposal for the purpose of receiving comments on the draft EIS. These hearings are held within the 45- to 60-day public review period with the time and location of the hearing being announced in the Federal Register. Written or verbal testimony is invited from environmental organizations; the academic community; Federal, State, and local government representatives; industry, and the public.

The information received through public hearings and the public comment process is analyzed along with any newly acquired information and, when appropriate, is incorporated into a final EIS. At this stage, new mitigating measures may be included after comments from affected States and other interested parties are reviewed. In some cases, new deferral options are developed and incorporated into the final EIS. Usually about 3 to 5 months after the public hearing, the final EIS is filed with EPA and made available to the public. Notice of its availability is published in the Federal Register.

Technical papers may be prepared to support the lease sale EIS's and can be incorporated by reference into the EIS, thus avoiding lengthy technical and descriptive material, while maintaining the usefulness of the EIS as a decision making document.

Description of Subelement Products

a. Scoping Process and Report

Scoping is conducted in response to CEQ regulations. Preparation, review, and approval of a scoping report takes place within 2 months after Area Identification. The scope and significance of the major issues associated with the leasing proposal and alternatives to that action are included in the report. These issues and alternatives are addressed in the EIS and are used to help design the leasing proposal.

b. Draft Environmental Impact Statement

NEPA requires preparation of an EIS before the conduct of any major Federal action which could significantly affect the quality of the human environment. The DEIS is filed with EPA, a notice of its availability is published in the Federal Register, and the document is released for public review.

c. Oil Spill Risk Analysis and Report

The oil spill risk analysis examines potential risks from proposed and existing production and transportation of oil in United States waters and provides a quantitative basis for discussion in the environmental impact statement. It estimates the probabilities of oil spills from the leasing proposal area occurring and contacting environmental resources. A formal report describing the oil spill model analysis (including assumptions and findings) is prepared for each EIS.

d. Endangered Species Consultation

In accordance with Section 7 of the Endangered Species Act, formal consultation is required if the leasing proposal's activity has the potential to affect an endangered or threatened species or destroy or adversely modify its critical habitat. Information gathered during these consultations is used in the EIS and/or the lease-sale decision process.

e. Public Hearings

A 45- to 60-day comment period immediately follows public availability of the draft EIS. Public hearings are held in a location convenient to residents in the areas adjacent to the area of the leasing proposal. Notification of the intent to hold public hearings is published in the Federal Register, including the date, location, and procedures for providing oral and written testimony.

f. Final Environmental Impact Statement (FEIS)

The FEIS, which includes an analysis of pertinent comments received during the comment period and any newly acquired information, is prepared and filed with EPA 3 to 5 months after the public hearings. A notice of its availability is published in the Federal Register and the document is released for public review.

g. Environmental Assessment

An environmental assessment may be prepared to evaluate the environmental effects of new issues which may arise after completion of the FEIS, or for smaller scale sale proposals, such as supplemental sale proposals or sulphur/salt sale proposals.

h. Technical Papers

Technical papers are normally listed and summarized as supporting documents in the appendix section of environmental impact statements. Copies are made available, upon request, to program reviewers.

Recent activities and accomplishments for this subelement include:

- o The following EIS's have been published and filed with the Environmental Protection Agency during FY 1989:
  - Norton Sound Mining Proposed Sale (Draft EIS)
  - Proposed Sales 123/125 - Central and Western Gulf of Mexico (Draft and Final EIS)
  - 5-year Program Supplemental (Draft EIS)
- o In 1988, a joint Federal/State Technical Task Force (later designated as Coordination Team) was formed by the Department of the Interior and the State of Alaska to ensure early and continued consultation on the Norton Sound Proposed Lease Sale under the OCS Mining Program. This Coordination Team was established with 31 members (including four from MMS) representing Federal, State, and local agencies and special interest groups; industry observers; and other interested parties. The Coordination Team has shared in the scoping and in the continuing evaluation of environmental studies to assess the development of potential gold placers and other non-energy mineral resources and provides recommendations to the Secretary and the Governor regarding possible leasing and development of those resources on the OCS.
- o MMS continued improvements to its oil spill risk analysis effort by testing methods to better project the movement, spreading, and dissolution of oil spills on the ocean surface. In addition, a panel of experts has been convened for technical advice on complex modeling issues.

5. Lease Sale Notification and Decisions ($1,223,000)

The objective of this subelement is to build upon the analyses performed under subelements 3 and 4 and culminates in the decision on leasing proposal's configuration, terms, and conditions. To this end, activities discussed below focus on important factors for decision makers, and solicit participation of Department of the Interior executives, other Federal agencies, State and local governments, and the private sector. This coordination and distillation of issues and options builds upon information collected and analyzed throughout the prelease process.

Description of Subelement Products:

a. Secretarial Issue Document (SID) and Associated Decision Material

The purpose of the SID is to clearly and concisely present information which the Department of the Interior needs to make decisions. The decisions concern the size, timing, location, terms, and conditions of a proposed lease sale. Additionally, the

SID provides a basis for balancing decisions between State and national interests as required by Section 19 of the OCSLAA. While the SID is only one of a number of decision documents presented to the decision maker, it is significant because it integrates all the analyses relevant for decision making including environmental, legal, economic, technical, and hydrocarbon resource information.

The SID relies heavily on the EIS which accompanies the SID through the decision process. The SID focuses on analysis and detailed discussion of sale-related issues and synthesizes information germane to decision-making. The SID contains nc recommendations but rather presents relevant information on each decision option. It contains a neutral summary of factors relevant to the decisions to be made and does not attempt to support a particular point of view.

A decision memorandum summarizing all issues and options for decisions on the sale proposal is then prepared. It is accompanied by the SID, the EIS, and the decision sheet. Departmental decision makers are provided copies of the decision material and their recommendations are solicited. These materials provide a basis for decisions on the size, timing, location, terms, and conditions which are then included in the proposed Notice of Sale document.

b. Proposed Notice of Sale

A Federal Register Notice announcing the availability of the proposed Notice is published about 90 to 120 days before an oil and gas lease sale is scheduled to be held. The Proposed Notice contains specific information on the blocks and bidding units which may be offered for sale. It also specifies lengths of lease terms, minimum bid levels, rentals, royalty rates, and numerous items of information to prospective bidders, including stipulations, joint usage conditions, and bidding instructions. This step gives the public, industry, and other agencies such as the Department of Defense, an opportunity to comment on the sale proposal.

Gulf of Mexico Notices are supplemented with detailed maps providing additional information on blocks and bidding units, acreage, and status. This material is mailed promptly to qualified bidders, and upon request, to all parties.

c. Section 19 Consultation

Section 19 of the OCSLAA mandates that Governors of affected States be provided the opportunity to comment on the size, timing, and location of a proposed lease sale. The Governors receive the SID, the EIS, and the Proposed Notice decision memorandum for information on the decision process, as well as a copy of the Proposed Notice. The letter transmitting the material describes the decisions made at this stage in the prelease process and explains how the State's comments on the proposed sale and its coastal zone management policies were considered in making the decisions on the proposed Notice. It also invites the Governor's comments on the size, timing, and location of the proposed sale, as required by Section 19 of the OCSLAA. During the following 60-day review period, MMS may meet with State officials to discuss and possibly resolve issues associated with the proposed sale.

d. Final Notice of Sale Decision Memorandum

Once comments on the Proposed Notice are received from the Governors of affected States and interested parties, MMS prepares a decision memorandum outlining the final decisions to be made on the proposed sale. The decision memorandum summarizes the comments on the Proposed Notice, analyzes all of the sale issues, and if needed, presents new decision options addressing concerns raised by commenters. It is an important analytical document since it contains information of any new decision options developed for Secretarial decision. The SID, the EIS, the proposed Notice decision memorandum, the proposed Notice itself, comments on the Proposed Notice, a recommendation memorandum and transmittal memorandum along with a Final Notice decision sheet accompany the Final Notice decision memorandum.

e. Final Notice of Sale

Once a decision is made to hold a sale, a Final Notice of Sale is published in the Federal Register at least 30 days before the announced sale date. This Notice, in similar manner to the Proposed Notice, includes, in final form, the various terms and conditions applicable to the sale and to ensuing leases. It places limitations on joint bidders (by Federal Register reference) and establishes the stipulations applicable to the various blocks offered, and procedures to be followed by successful bidders in paying the balance of payments due and obtaining their leases.

f. Balancing Letter

In accordance with Section 19 of the OCSLAA, the Governor of each affected State is notified, in writing, of the reasons for the determination to accept or reject the Governor's recommendations on the lease sale. Section 19 requires DOI to accept such recommendations if it is determined, after having provided the opportunity for consultation, that they provide for a reasonable balance between the national interest and the well-being of the citizens of the affected States. A letter explaining the balance reached is sent to each Governor with a copy of the Final Notice of Sale.

6. Lease Sale and Issuance of Leases ($516,000)

The prelease process of MMS ends with the conduct of the lease sale and the issuance of leases from that sale. The sales of offshore leases are conducted under competitive bidding procedures. Separate sealed bids are submitted for each block bid on and are received before the date of the sale as specified in the Final Notice. The purpose of this lease sale step is to record and publicly announce the bids received; no bids are rejected or accepted at the sale. After the bid opening, MMS conducts a review of the bids to determine whether the highest valid bid for each block exceeds our bid adequacy criteria. Technical and economic information gathered prior to the lease sale for the purpose of evaluating the potential mineral resource value of the blocks (provided by the Resource Evaluation Program subactivity) is considered during this review. The evaluation and acceptance or rejection of the bids on a case-by-case basis must, by regulation, occur within 90 days after the lease offering is held. Pertinent information is sent to the Department of Justice, Antitrust Division, and the Federal Trade Commission (FTC) for review. The Justice Department and FTC recommendations are considered in the final decision on which bids will be accepted or rejected.

Lease sales are conducted by the appropriate OCS regional office. Before most sales, extensive training sessions and mock sales are held to assure that all procedures and activities are carried out accurately and quickly. Detailed procedures are put in place to safeguard bids, facilitate the public opening and announcement of bids, adjudicate bid documents, enter information into computers for processing, and create the reports used by managers in the bid acceptance or rejection process. Monies received for the one-fifth bonuses, which are required when bids are submitted, must be protected, recorded, and deposited in the U.S. Treasury or returned, in a timely manner, to unsuccessful bidders. Facilities large enough for the sale are procured in each region for each sale. In FY 1991 six oil and gas sales and one solid mineral sale are scheduled to be held.

7. Postlease Adjudication and Maintenance of Leases ($570,000)

The records for each lease must be maintained until that lease is terminated by law, relinquished, or expires. In FY 1989, approximately 6,224 lease records were being maintained in the four regional offices. Maintenance included actions related to assignments of record title (approved by the Department of Justice), relinquishments, extensions, rentals, status (tract and serial register books), statistics, and the development and updating of bidder qualification files.

Once marketable quantities of oil or gas are found, a permit is required to transport the product across the OCS. Pipeline rights-of-way are granted only after appropriate consultation and coordination is conducted with other agencies.

8. NEPA and other Reviews for Industry Activities ($2,805,000)

After the issuance of a lease, lessees are notified of any special requirements (outside of the normal requirements set forth in OCS regulations) on a lease needed to mitigate potential impacts identified during the prelease NEPA process and the Secretarial decision process. Such special requirements include those measures needed to fulfill the stipulations developed through the prelease NEPA process that are included in the lease contract for specific tracts.

Lessees develop plans detailing their proposed actions for exploration and, if sufficient resources are discovered, plans for development and production including pipeline activities. Each plan must contain a certification of consistency with applicable State plans approved under the CZMA. In close coordination with work carried out by the Regulatory Program, each plan and accompanying environmental report is reviewed to determine whether it meets the requirements under the OCS Lands Act and relevant associated environmental laws and special lease stipulations, and will acceptably mitigate adverse impacts to the environment. Included is a detailed review of the impacts from the proposed activities and of the mitigation measures needed for oil spill prevention and cleanup, air quality, water quality, biologically sensitive areas and species (including endangered species, marine mammals, and fishing concerns), archaeological and cultural resources, onshore support and storage facilities, and relevant meteorological, oceanographic, and geological conditions. During the review, other Federal Agencies and affected States are consulted, including agencies for endangered species consultations and State Historic Preservation Officers.

Upon completion of the review, an environmental analysis is prepared in the form of a categorical exclusion review or an environmental assessment, as required by NEPA, for each plan. The analysis is used as a decision making tool to determine whether the environmental impacts are acceptably mitigated and to determine if an EIS must be prepared. An EIS, with possible attendant public hearings, is required prior to plan approval if potential impacts can significantly affect the human environment. If the plan and mitigation measures are acceptable, the plan is approved.

In addition, Section 25 of the OCSLAA provides that an EIS will be required for the approval of at least one oil and gas development and production plan in any area other than the producing areas of the Central and Western Gulf of Mexico and the Santa Barbara Channel offshore California.

During conduct of lessee operations, activities are monitored to ensure compliance with any required mitigation measures and that the measures in place are sufficient to mitigate the adverse impacts. By carefully evaluating the mitigation measures, technical and operational requirements are kept up-to-date and are incorporated in regulations, orders, and conditions for granting permits. At the end of the life of a platform, MMS reviews the lessee's proposed method of its removal, prepares an Environmental Assessment, and completes Endangered Species Act Section 7 consultations.

Also as part of its oversight of industry activity, MMS does an environmental review of proposals for geological and geophysical activities permitted under the Resource Evaluation Program. These activities typically require Categorical Exclusion Reviews or Environmental Assessments.

Description of Subelement Products

a. Categorical Exclusion Review for Regulatory Action

The Department's categorical exclusions (CE) cover actions which in its experience do not cause significant environmental effects. Included as CE's are most exploration, development, and production plans in the central and western Gulf of Mexico, and rights-of-way permits that do not result in a new pipeline corridor to shore. Prior to approval of such plans or permits, a categorical exclusion review of the environmental effects of the activities proposed in the plan is made. If the potential for a significant impact does not exist, the plan may be approved. Otherwise, an environmental assessment is prepared.

b. Environmental Assessment (EA) for Regulatory Action

For non-categorically excluded activities, the environmental effects of the activities proposed in the plan are reviewed prior to approval of an exploration plan or a development/production plan (DPP) in accordance with NEPA. During the reviews, environmental effects are analyzed and documented in an EA.

c. Environmental Impact Statement for Regulatory Action

The NEPA compliance for development and production plans results in the preparation of an EIS when MMS concludes that the environmental assessment indicates that approval of the plan would constitute a major Federal action significantly affecting the quality of the marine, coastal, or human environment. Notice of the availability of a draft EIS is published in the Federal Register and public hearings are held. After reviewing public comments, a final EIS is prepared and a decision can be made on the plan.

d. Oil Spill Risk Analysis and Report

An oil spill risk analysis may be prepared for each development/production plan EIS and some DPP EA's. The analysis examines potential risks from proposed and existing production and transportation of oil in United States waters and provides a quantitative basis for discussion in the development and production plan EIS. A formal report describing the oil spill model and analysis (including assumptions made and results) may be prepared.

e. Endangered Species Consultation

The Endangered Species Act (ESA) Section 7 consultation conducted in the prelease process covers exploration activities. Such consultation may be reinitiated at the development stage if the proposed development/production activity has the potential to affect an endangered or threatened species or destroy or adversely modify its critical habitat. Information gathered during these consultations is used in the decision process for approval of development/production plans. Consultation may be reinitiated at any time if species are newly listed or critical habitat designated, if an action or its effects change significantly, if new biological information or effects warrant reexamination of previous biological opinions, or if allowable incidental take limits are exceeded.

f. Environmental Reports Review

Environmental reports are prepared by the lessee or operator and submitted along with an exploration or a development/production plan. These documents are reviewed, along with the plan, and must be approved before exploration or development and production activities can begin.

g. Categorical Exclusion Review for Geological and Geophysical Activity

Prior to issuing a permit to conduct a Geological and Geophysical (G&G) survey (an activity conducted through the Resource Evaluation Program), MMS conducts an environmental analysis of the potential effects of the proposed survey activities. Approval of such activities are categorically excluded except when the proposed activity includes the drilling of deep stratigraphic test holes or uses solid or liquid explosives. If the categorical exclusion review shows a potential for a significant impact or significant controversy, an environmental assessment must be prepared. Otherwise, the permit may be approved.

h. Environmental Assessment for Geological and Geophysical Activity

An environmental assessment is prepared if (1) the permit involves deep stratigraphic drilling or the use of explosives, or (2) the categorical exclusion review shows the potential for causing a significant impact. The permit may be approved if no significant impact is found.

Recent activities and accomplishments for this subelement include:

- In order to address the wide range of issues concerning the air quality impacts from OCS facilities adjacent to California, MMS participated in a negotiated rule making process to revise its OCS air quality rules. The information gathered during the negotiated rule making process was used to develop a notice of proposed rule making revising the air quality rules for OCS facilities adjacent to California. This rule making was published in the Federal Register on January 17, 1989. In addressing numerous comments on the January 1989 notice of proposed rule making, the MMS is considering different approaches including publication of a new notice of proposed rule making. The MMS has worked closely with the Environmental Protection Agency in reconsidering the proposed rule.

- MMS prepared a report to Congress pursuant to Section 20(e) of the Outer Continental Shelf Lands Act for assessment of the cumulative effect of activities conducted under the Act.

- Completed work on 2 task forces with the State of Florida on exploratory drilling issues in the Outer Continental Shelf off Southwest Florida. One task force assessed the likelihood, fate, and transport of oil spills, and the second assessed potential impacts of drilling operations on Florida coastal and marine resources.

- MMS and the National Marine Fisheries Service (NMFS) have concluded a generic platform removal ESA Section 7 consultation for Gulf of Mexico oil and gas platforms. This consultation was needed because removal of platforms with explosives could adversely affect endangered marine turtles. Lessees may operate under provisions of the generic consultation if the proposed activity meets certain standards. An assessment of the risk to endangered and threatened sea turtles as a result of structure removals by explosives in the Gulf of Mexico region is being conducted by both MMS and NMFS. A survey to address the relative abundance and distribution of sea turtles in relation to OCS structures is being conducted and is likely to provide needed information on the seasonal and distributional movement of these species.

9. Program Management and Support ($1,704,000)

This subelement provides program guidance and direction, internal and external coordination of program activities, and program and technical support for the work of the entire Leasing and Environmental Program. Policy guidance and program direction are provided by the Associate Director for Offshore Minerals Management, the Deputy Associate Director for Offshore Leasing, Regional Directors, the Office of Information and Publications, and the Office of Offshore Management Support. Included in the Office of Offshore Management Support is the Offshore Systems

Center which centrally develops or reviews all of Offshore's ADP procurement and major systems design, standardizes data elements for all Offshore regions and headquarters offices, prepares activity reports and develops the ADP Strategic Plan. The Offshore Minerals Management (OMM) presently has seven Perkin-Elmer minicomputers which are operational in regional offices located in Anchorage, Los Angeles, and New Orleans. Currently, three major systems reside on the Offshore Perkin-Elmer computers: the Outer Continental Shelf Information System; the Offshore Inspection System; and various Offshore mapping systems. Collectively, these systems utilize almost all the available Offshore data and form the core body of knowledge of oil and gas operations on the Outer Continental Shelf. Cartographic, editorial, and other program support duties are provided by support staffs within each region and are funded within this subelement.

Other Programs ($2,272,000)

In addition to the nine major subelements described above, the Leasing and Environmental Program is responsible for managing other mineral leasing activities and coordinating the work through task forces and advisory groups. This workload is discussed below.

Leasing Area Maps and Diagrams

The Federal Government has jurisdiction over and is authorized to issue mineral leases on the OCS. The OCS must be precisely defined to assure that only those submerged lands falling under the jurisdiction of the United States are offered for lease. The Federal Government must also be able to detect instances where leasing efforts by coastal States or foreign countries might inadvertently include OCS lands.

The OCS cadastre is the foundation upon which MMS and industry base most offshore activity. To date, this cadastre, as portrayed on approximately 500 Official Protraction Diagrams (OPD's) and Leasing Maps (LM's), is based upon the North American Datum of 1927 (NAD 27). OPD and LM information is presented in greater detail along with additional data on approximately 15,200 Supplemental Official OCS Block Diagrams (Split Blocks), of which 4,700 have been computed and approved. Split Blocks are customarily issued only for nearshore blocks which contain the 3-geographical-mile and 8(g) areas (where 27 percent of the revenues are shared with affected coastal States). They also depict international, Federal, and State boundary lines, identify Section 7 (boundary dispute) areas, and list precise areal measurements for each subarea.

The development of these products is an exacting and lengthy process requiring research using various products and procedures such as: hydrographic and topographic survey sheets, coast pilots, and nautical charts produced by the National Ocean Service (NOS) and/or topographic maps produced by the U.S. Geological Survey (USGS); satellite, terrestrial, and reconnaissance surveys; mathematical computations; consultation and review with coastal States; frequent evaluation and concurrence by the Department of State; and in some cases, approval by the Department of Justice. Existing diagrams are periodically revised and reissued if physical coastline changes occur and the changes are documented by (1) the NOS on new/revised large-scale charts or (2) cadastral surveys. Diagrams are also revised and reissued if legal decisions cause jurisdictional changes.

The extensive database supporting development of the leasing diagrams and maps is also used when technical and legal boundary disputes arise over the location of the 3-geographical-mile and 8(g) lines. Precise information and skilled technical, professional, and legal expertise are required to monitor boundary issues. It must also be available when decisions are made on the impact that certain offshore features (low water elevations and islands) and boundary concepts (decree lines, straight baselines, bay closing lines, and historical statehood land grants) have on the location of boundary lines.

When NAD 27 was adopted as the official datum for the contiguous 48 States and mainland Alaska over 50 years ago, it was based upon the best and most accurate contemporary geodetic surveying instruments and procedures. NAD 27, however, has inherent problems; and in 1974, based upon the National Academy of Sciences' findings, the governments of the U.S., Canada, Mexico, and Denmark (for Greenland) agreed to readjust the control survey network for North America. The result of this agreement is what has become the North American Datum of 1983 (NAD 83), officially adopted by the U.S. as its datum in December 1988.

Most of the geographic source data used by MMS to develop offshore boundaries for the OCS cadastre are derived from other Federal surveying and mapping agencies which have instituted NAD 27 to NAD 83 conversion plans - primarily the NOS and the USGS. The official adoption of the new datum by the Federal Government and the implementation of datum conversion plans by these two agencies was the impetus for MMS in FY 1989 to begin identifying the impacts of the datum conversion. It is estimated that full MMS conversion from NAD 27 to NAD 83 on the OCS will be an ongoing process until the end of this century.

Resources are also devoted each year to identify, monitor, and resolve specific boundary disputes which exist in all regions of the OCS. A key boundary related lawsuit (United States vs. State of Alaska, No. 84, Original) concerns the location of the 3-geographical-mile and 8(g) lines in the Northern Chukchi and Beaufort Seas. The Supreme Court has jurisdiction over this case which will ultimately result in the establishment of a fixed decree line along portions or all of the northern coastline of Alaska.

Work related to fixing a decree line (coordination, planning analysis, mapping, and agreement on the location of the baseline) will continue throughout FY 1990. Careful attention will be paid to the precedents set during this process since they have the potential for affecting other areas of the OCS.

Recent activities and accomplishments include:

- Completed the video taping portion of the Federal/State California shoreline reconnaissance survey (for resolution of offshore boundary issues).
- Began design development of the Federal/State video shoreline reconnaissance survey of Oregon at the State's request; the survey project will be expanded to also include the State of Washington.
- Completed Goodnews Bay (Alaska) revisory shoreline survey.
- Commenced acceptance testing the Offshore Block, Boundary, and MAP/OPD Information System (OB2MIS).
- Continued technical support for Chandeleur Sound litigation.
- Prepared "An Issue Paper Relating to: North American Datum of 1983 Implementation on the Outer Continental Shelf;" began working with the National Geodetic Survey and the oil industry (through the National Ocean Industries Association) to develop standardized NAD 27/NAD 83 transformation software for use on the OCS; developed 4 NAD 83-referenced OPD's with USGS assistance.
- Resolved international boundary portrayal issues with the Department of State; revised published OPD's to reflect the current U.S. positions; and began production of new OPD's to depict the Exclusive Economic Zone (EEZ) boundaries of the continental U.S.

OCS Advisory Board Coordination

The OCS Advisory Board was established in 1975 to provide advice to the Secretary and other officers of the DOI in performing discretionary functions of the OCSLAA.

The OCSLAA requires consultation by Interior with affected States and other interested parties on all aspects of leasing, exploration, development, and protection of the resources on the OCS. This requirement is partially fulfilled through the activities of the OCS Advisory Board, which is comprised of: (1) a policy committee; (2) six regional technical working group committees; and (3) a scientific committee. The policy committee, consists of representatives of the Governors of all coastal States, including Hawaii and Pennsylvania, various Federal agencies, and the private and public sectors. It provides policy advice to the Secretary on all aspects of the OCS program. The committee is empowered to and often does appoint subcommittees to deal with specific issues and report back to the full committee.

Six regional technical working group committees, which operate at the field level and meet generally twice a year, provide advice to the Director and Regional Directors on technical matters of regional concern relating to OCS activities. Membership totals about 120 technical level representatives of coastal States and Federal agencies, and members of the private and public sector. The latter appointments are made to effect balance in terms of expertise, points of view, and functions of the committees.

The scientific committee is composed of 15 scientists, each selected on the basis of his or her scientific competence, reputation within their field of expertise, and ability to assess important elements of the Environmental Studies Program. The committee normally meets three times a year and advises the Director on the feasibility, appropriateness, and scientific value of the Environmental Studies Program.

The MMS provides support for all the committees of the Advisory Board, including the services of an Executive Secretary. Such support also includes travel expenses for non-Federal members of the committees, planning and paying for committee and subcommittee meetings, and producing meeting records as required by the Federal Advisory Committee Act.

Planned FY 1991 activities and accomplishments include:

- o Two Policy Committee meetings will be held in FY 1991.
- o Twelve RTWG meetings will be held in FY 1991.
- o Three Scientific Committee meetings will be held in FY 1991.

Strategic and International Minerals

MMS has established cooperative agreements with nine coastal States for the joint analysis of mineral resources and environmental impacts of potential marine mineral leasing. This has included the preparation of documents required by NEPA to evaluate effects of mineral development.

During FY 1990, a final EIS was completed which was jointly prepared by MMS and the State of Hawaii for a potential cobalt crust lease sale in the Hawaii/Johnston Islands area. Further environmental analysis might be expected in FY 1991 should a decision be made to continue the presale process. A February 1991 marine minerals sale is also planned for the Norton Sound area offshore Nome, Alaska. A revised draft EIS for this sale is scheduled for completion in mid-1990 and the final EIS would follow in the early part of FY 1991. In connection with this proposed sale, a November 1989 public workshop was funded by MMS. The workshop considered results of new studies which necessitated the revision of the original Draft EIS. The workshop recommended additional baseline studies and monitoring proposals to accompany potential marine mineral development in Norton Sound. These studies, if initiated and leasing ensues, would likely begin in FY 1991.

A project aimed at mitigating wetland and barrier island destruction in Louisiana has grown out of the work of the Gulf of Mexico Federal/State Task Force. The cooperative arrangement was renewed in September 1989 with the objective of evaluating the potential of developing Ship Shoal in Federal waters off the coast of Louisiana as a source for beach sand to renourish Isles Dernieres and Bayou LaFourche and stave off wetland loss. The evaluation phase of the project is expected to conclude in early FY 1991.

Should resource evaluation results of 1990 show promise for placer development offshore Oregon, it is likely that environmental evaluations will follow in FY 1991 to gauge potential obstacles or limitations on such development. Other initiatives may materialize by FY 1991 involving Northeast States, but it is not yet possible to fully evaluate early indications of interest. The planning, evaluation, and development of leasing and environmental guidelines for any potential Federal marine minerals sale will typically be accomplished by joint Federal/State task forces or similar coordinative mechanisms on a case-by-case basis. These task forces will include interested Federal Agencies and affected States.

SELECTED WORKLOAD OUTPUTS

A summary of selected workload outputs in the Leasing and Environmental Program by subelement and other initiatives is presented in the following table:

Subelement	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate	Inc(+) Dec(-)
1. Management of Environmental Studies:				
o Regional Studies Plans	13	13	13	---
o National Studies Lists	1	1	1	---
o Procurement Packages	189	193	177	- 16
o Technical Proposal Evaluations	92	87	80	- 7
o Contracts Monitored	159	180	166	- 14
2. Development/Review of 5-Year OCS Program:				
o Develop a New Program	1	1	1	---
o Annual Review	1	1	1	---
3. Process to Determine 5-Yr Program Proposals that will be Analyzed in EIS:				
o Requests for Interest	1	5	4	- 1
o Calls for Information Nominations	6	4	9	+ 5
o Area Identifications	5	3	8	+ 5
4. Environmental Assessment Process:				
o Scoping Process Reports	5	4	0	- 4
o Draft Environmental Impact Statements	4	7	4	- 3
o Oil Spill Risk Analyses/Reports	4	4	3	- 1
o Endangered Species Consultations	11	13	12	- 1
o Public Hearings	4	7	4	- 3
o Final Environmental Impact Statements	1	6	7	+ 1
o Environmental Assessments	0	0	0	---
o Technical Papers	7	15	12	- 3
5. Lease Sale Notification and Decisions:				
o Secretarial Issue Documents	2	4	7	+ 3
o Proposed Notice of Sale Decision Memoranda	2	6	7	+ 1
o Proposed Notices of Sale	1	5	8	+ 3
o Section 19 Letters	2	11	19	+ 8
o Final Notices of Sale	2	2	8	+ 6
o Final Notice of Sale Decision Memoranda	2	2	8	+ 6
o Balancing Letters	6	6	18	+ 12
6. Lease Sale and Issuance of Leases:				
o Lease Sales	3	3	7	+ 4

	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate	Inc.(+) Dec.(-)
7. Postlease Adjudication and Maintenance of Leases:				
o Active Leases Maintained	6,375	6,867	7,710	+ 843
8. NEPA Review for Industry Activities:				
o Categorical Exclusion Reviews for Regulatory Action	1,019	1,112	1,219	+ 107
o Environmental Assessments for Regulatory Action	119	150	161	+ 11
o Environmental Impact Statements for Regulatory Action	0	1	3	+ 2
o Oil Spill Risk Analysis/ Reports	1	4	3	- 1
o Endangered Species Consultations	15	24	24	---
o Environmental Reports Reviewed	263	311	359	+ 48
o Categorical Exclusion Reviews for Geological/Geophysical Activity	270	278	312	+ 34
o Environmental Assessments for Geological/Geophysical Activity	9	14	15	+ 1
Other Initiatives				
1. Leasing Area Maps and Diagrams:				
o Official Protraction Diagrams and Leasing Maps	120*	62**	64**	+ 2
o Supplemental Official Block Diagrams	180	1,904**	3,300**	+1,396
2. Advisory Board Coordination:				
o Policy Committee Meetings	1	2	2	---
o Regional Technical Working Group Committee Meetings	9	11	12	+ 1
o Scientific Committee Meetings	3	3	3	---

3. Strategic and International Minerals (***)

* Revised 66 previously published OPD's/LM's; developed 54 new OPD's.

** Reflects the estimated number of 3-mile and 8(g) Split Block diagrams, as designated by the 5-year schedule, that may have to be produced or revised 90-120 days prior to the Proposed Notice of Sale. Does not account for delays, cancellations, or deferrals, and does not generally include Split Blocks that may be needed along the EEZ boundary. For FY 1990 there are 2 sales, and for FY 1991 there are 7.

*** Workload units included in subelements 1-7.

Increase from FY 1991 Base:

(Dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
$	17,457	18,430	+973
(FTE)	(335)	(335)	(---)

Conflict Resolution (+$615,000)

The Leasing and Environmental Program requests an increase of $615,000 to help resolve concerns and to expand outreach efforts related to oil and gas leasing on the OCS. Over a period of several years, the OCS oil and gas leasing program has experienced a series of delays which have slowed the rates of discovery, development, and production, and also, resulted in the loss of hundreds of millions of dollars in bonus, rental, and potential royalty revenues to the States and Federal Government. Overall, the delays are partly a result of insufficient or conflicting information concerning the program, and different perceptions regarding the level of acceptable risk.

These additional funds would allow for increased participation in joint task forces or other cooperative and informational ventures to resolve issues and narrow differences. Third-party mediator initiatives could be initiated to resolve specific program issues. Additionally, the funds would provide for public meetings and workshops to expand opportunities to allow MMS to be aware of public concerns and respond to them, as well as foster understanding of the nature of the OCS planning process and different types of operational activities associated with the program.

Distribution of change by object class

The object class detail for the proposed change is as follows:

	Amount ($000)
Travel	+160
Transportation of Things	+1
Rents and Communications	+15
Printing	+10
Supplies and Materials	+4
Other Services	+425
Total	+615

Excellence in Education (+$300,000)

Interior supports the President's goal of raising the standard of education in America. In addition to Indian education programs, the Department has a variety of non-Indian education initiatives that include activities in support of elementary, secondary and post-secondary school programs as well as programs for the general public regarding the Nation's natural resources. For the Minerals Management Service a total of $300,000 is being proposed for the excellence in education effort.

These additional funds would be used to prepare an oceans energy/environment education curriculum for distribution to schools and materials to be used by participants in an MMS Speakers Bureau, which would address schools as well as other public groups. The curriculum and materials would include, but not necessarily be limited to, a video, brochures, and other literature that would enhance awareness of the role of energy resources from the OCS in daily life. The curriculum and materials would also address the role of these energy resources in the economy and discuss environmental concerns.

Additionally, this funding will allow MMS to obtain better public input and improve consultation through the production of general interest materials that satisfy public demands for information regarding environmental effects and demonstrate the integral relationship of the OCS program to the national energy strategy.

Distribution of change by object class

The object class detail for the proposed change is as follows:

	Amount ($000)
Other Services......................................	+300
Total...	+300

Maintenance of Perkin-Elmer Computer System (+$85,000)

The Leasing and Environmental Program requests an increase of $85,000 to cover a portion of increasing maintenance costs and partial assistance in a feasibility study for the proposed replacement of Offshore's primary support computers.

As the seven (7) Perkin-Elmer computers age, maintenance becomes not only more frequent but more extensive. The current maintenance contract, negotiated in 1987, must be readvertised for bidding. Costs are expected to increase by 25 to 100 percent depending on location. Therefore, an increase in funds is requested to assist in addressing these increasing costs.

The Perkin-Elmer computers are the major data information and processing system for the Outer Continental Shelf (OCS). Important functions such as bid evaluation and lease block data storage are based on this system. Due to the increasing number of requests for information from Minerals Management Service

(MMS), the States and other Federal agencies, as well as increasing complexity of MMS operations, this system is close to technological obsolescence and exceeding its capacity. As the effectiveness of the OCS program relies on accurate and timely data processing and integration, an increase is requested to fund contractual assistance and/or intra-agency support for the development/review of technical specifications, as well as technical consulting during the evaluation of vendor's proposals.

Distribution of change by object class

The object class detail for the proposed change is as follows:

	Amount ($000)
Other Services	+85
Total	+85

Centralized Training (-$27,000)

A transfer of $27,000 is being made to the Administrative Operations subactivity of the General Administration budget activity due to the centralization of certain training activities. This transfer is discussed in detail in the increase statement for the Administrative Operations subactivity.

Distribution of change by object class

The object class detail for the proposed change is as follows:

	Amount ($000)
Personnel Compensation	-14
Personnel Benefits	-2
Travel	-2
Other Services	-9
Total	-27

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Justification of Program and Performance

Activity: Outer Continental Shelf Lands
Subactivity: Resource Evaluation Program

(Dollar amounts in thousands)

Subactivity		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc.(+) Dec.(-) from Base
Resource Evaluation Program	$	22,354	22,042	22,504	22,504	---
	(FTE)	(346)	(346)	(344)	(343)	(-1)
Total Requirements	$	22,354[1]	22,042	22,504	22,504	---
	(FTE)	(346)	(346)	(344)	(343)	(-1)

Impact of Public Law 99-177

(In thousands of dollars)

FY 1990 Enacted To Date	P.L. 99-177 B. A. Cancellation	FY 1990 Adjusted Appropriation
22,354[1]	-312	22,042

A reduction of $312,000 in the Resource Evaluation subactivity has been accomplished by a decrease of $156,000 in the collection of geological and geophysical data. This reduction curtails data collection activities for both the Atlantic and Pacific Regions and delays data review and analyses. If sales in those areas occur, evaluation would be made with older data. Acquiring some new data being shot by industry would be delayed by at least a year in those areas. Once Resource Evaluation is able to collect the data, costs and time for processing, analyzing, and reproduction must be included. This would not affect fair market value of tracts offered in these sales.

In addition, $156,000 was taken from the Strategic and International Minerals Program. This amount represents a 22 percent loss in program contract support. The effect falls primarily on Federal/State cooperative agreement activities. The program would be forced to defer a possible beach nourishment project affecting Alabama barrier islands. In addition, funding for cooperative agreements involving prelease activities in Alaska (Norton Sound placers) and Hawaii (cobalt-manganese crust resources) would be reduced.

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[1] See Footnote on page MMS-22.

Objectives

- To identify areas favorable for accumulation of hydrocarbons and to provide information on the distribution of offshore resources and the hydrocarbon potential of the OCS.
- To acquire and analyze scientific data and information in order to develop a basic knowledge of the geologic history and its effect on hydrocarbon generation, distribution and accumulation in the OCS.
- To provide scientific data and information concerning offshore lands to assure an adequate data base is available to the Secretary to make informed decisions regarding the stewardship of the OCS.
- To provide estimates of undiscovered mineral resources, exploration and development scenarios, and economic parameters and statistical data for the OCS to assess the impacts of the objectives of the OCSLAA.
- To develop and maintain an accurate data base of estimates for proven and indicated oil and gas reserves, as mandated by the OCSLAA, and an inventory of hypothetical and speculative oil and gas resources.
- To provide resource economic evaluations and bid adequacy determinations for blocks bid upon in lease sales to assure that the Government receives fair market value for leased offshore lands.
- To provide sound analytical and technical support to the offshore program, including postlease regulatory activities, so that all activities can be carried out effectively and efficiently.

Program Description

The Resource Evaluation Program identifies the potential location and accumulation of offshore hydrocarbon resources. Through acquisition, development, and analysis of scientific data the extent and economic value of the OCS resources is determined. This resource assessment is the core for understanding the relative resource potential of the various OCS areas. The determination of this potential allows MMS to fulfill it's mandate of responsible stewardship of the OCS. Section 18(a)(3) of the Act provides that the timing and location of individual OCS lease sales be selected based on consideration of balancing the potential for environmental damage, for the discovery of oil and gas, and for adverse impacts on the coastal zone. The development of estimates of technologically and economically recoverable hydrocarbon resources serves as the basis for identifying candidate areas for assessing potential environmental impacts. Economic analyses of possible environmental damages and adverse coastal zone effects from proposed OCS oil and gas leasing are performed to evaluate the net social value (development benefits minus social costs) from this activity. Additionally, the Resource Evaluation Program develops and maintains current estimates of oil and gas reserves in developed and developing fields and provides information on the potential availability of undiscovered offshore oil, gas, and mineral resources. Accurate inventories of these resources are essential to the national security of the United States; these resources may need to be made available to meet future energy and mineral supply emergencies. These inventories are reported to Congress, as required by law.

The resource information, the economic estimates, and the conclusions resulting from analyses of these data also enable the Department to make informed balancing decisions in resolving conflicts on the OCS with other Federal Agencies, State and local governments, and other interested groups. Furthermore, MMS provides data and information concerning the resource potential of OCS areas to other Federal Agencies in support of their activities, e.g., proposed marine sanctuaries, traffic separation schemes, international boundary disputes, etc.

Those aspects of the Resource Evaluation Program which focus on providing scientific data, information, and analyses on offshore geology and hydrocarbon resource potential include: (1) acquisition of G&G data; (2) production of regional G&G maps and analyses; and (3) production of tract- and prospect-specific maps and analyses for resource economic evaluations. These outputs are essential to completing major OCS management milestones and to the evaluation process leading to the acceptance/rejection of high bids received at the lease sale.

The Resource Evaluation Program combines much of the G&G data and analyses with resource economic and engineering data to produce outputs and products that are also essential to completing major steps in the leasing process. These steps proceed from the Geology Report through the acceptance/rejection of high bids. The objectives of these analyses are to: (1) develop estimates of technologically and economically recoverable undiscovered hydrocarbon resources for planning and for potential lease sale areas to be used throughout the leasing decision process; (2) inventory oil and gas reserves of individual fields, reservoirs, and leases in support of planning decisions, lease sale evaluations, supervision of field and reservoir development and long-range energy supply projections; (3) analyze, develop, and design economic and engineering parameters on both a lease sale and a tract-specific basis to be used in assessing environmental impact and in determining bid adequacy; and (4) develop economic and engineering methodologies and studies for the leasing process. Fundamental to accomplishing these objectives is the design, maintenance, and update of advanced computer models, ADP systems, and data bases for economic and engineering analyses that are a basic part of the overall OCS program and decision making process.

To fulfill requirements of Section 8(g) of the OCSLAA, the Governors of States adjacent to areas proposed for leasing are provided with the following information at the time of the Call for Information and Nominations:

- An identification and schedule of the areas and regions proposed to be offered for leasing;

- At the request of the Governor of such State, all information from all sources concerning the geographical, geological, and ecological characteristics of such tracts;
- Estimates of the oil and gas reserves in the areas proposed for leasing; and
- At the request of the Governor of such State, an identification of any field, geologic structure, or trap located wholly or partially within 3-nautical miles of the seaward boundary of such coastal State, including all information relating to the entire field, geologic structure, or trap.

At the time of Area Identification, the Resource Evaluation program staff is responsible for making a determination of whether or not a common structure exists with State submerged lands on each tract in the Section 8(g) zone. This information is then provided to the Governors of affected States.

The eight major subelements of the Resource Evaluation Program and their products are described on the following pages:

1. Acquisition of G&G Data ($2,284,000)

The objective of this subelement is to acquire and analyze G&G data in order to first identify broad areas and then specific tracts with geologic potential for oil and gas. These data are the basis for mapping and evaluating the formation and distribution of potential offshore resources. The data also provide inputs for determination of bid adequacy.

Industry collects G&G data under permits issued through the Resource Evaluation Program. A condition of the permits issued to industry allows MMS to selectively acquire G&G data to directly support the analyses required throughout the leasing process. These data include logs and other data from deep stratigraphic tests and significant amounts of Common Depth Point (CDP) seismic data. Since 1968, over 1,215,000 line miles of CDP data have been acquired in OCS areas. These data are analyzed and interpreted in order to map a proposed lease sale and determine areas having potential for the occurrence of hydrocarbon resources. They are also used to specifically locate and map geologic structures capable of trapping hydrocarbons, and to establish values for the geologic parameters necessary for resource economic evaluation in support of determinations of the adequacy of bids received at a lease sale.

A comparison of these costs for the period FY 1989-1991 is presented below. It should be noted that the costs given in this table only represent the cost associated with acquiring the data and do not reflect the costs for analysis of this data by MMS personnel.

(In thousands of dollars)

	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate	Inc.(+) Dec.(-)
Data reproduction and special processing of data not available under permit to support litigation, Section 8(g), and boundary disputes.	1,657	1,498	1,498	---

Description of Subelement Products

a. G&G Permits Processed and Approved

Gathering of prelease data by industry on the OCS requires the issuance of G&G permits. Processing and approval of exploration permits includes: review of applications for permits and agreements for OCS geologic or geophysical scientific research or exploration for mineral resources; the issuance of permits and agreements, including terms, conditions, and stipulations; the monitoring of permit activity; and all correspondence with prospective permittees.

b. G&G Data Acquisition Actions

After data have been collected by permittees, MMS selectively acquires those data which are needed to augment the existing data base. The steps in acquiring data from permittees include: preparation and approval of a proposed data acquisition list; onsite inspection of data; selection of data; preparation and submittal of requisition forms to reimburse permittees for data reproduction and the cost of special reprocessing requested by MMS; preparation of justifications for selection of data and lists of deliverable items; and contact and correspondence with permittees, administrative personnel, and headquarters personnel. At the beginning of each fiscal year, G&G data requirements to support the leasing schedule are identified and priorities established. Throughout the year these data needs are reassessed as required by the leasing schedule.

c. Line Miles of CDP Data Acquired

The CDP seismic data provide the primary data base required for much of the effort in the Area Identification and prospect evaluation process and to support the activities of other Federal Agencies. Seismic data in a planning area are used not only for products related to a specific proposed sale, but are supplemented, as required, with new data for later proposed sales in the same planning area.

Recent activities and accomplishments for this subelement include:

- There has been continuing participation by program personnel as technical advisors on various Federal, State, and joint task forces where geophysical data collection and interpretation on the OCS play a part.
- Compilation of a statistical summary report on G&G data acquired by MMS through FY 1989 was initiated with completion scheduled for FY 1990. The publication will detail the quantity and costs associated with the various types of data vital to the Resource Evaluation Program.
- The Resource Evaluation Program continues to manage the largest and most comprehensive OCS G&G data base in the Federal Government. Dissemination of nonproprietary data and information to other agencies and the public is accomplished locally at MMS regional offices and internationally through a cooperative agreement with the National Oceanic and Atmospheric Administration.
- Updating of 30 CFR 251, Geological and Geophysical Explorations of the Outer Continental Shelf, was initiated in FY 1987, and will be completed in FY 1990.
- A bureau-wide effort is underway to review the specific requirements of the Resource Evaluation Programs geologic mapping functions for the purposes of automating regional mapping activities.
- A publication is being designed to provide information concerning deep stratigraphic tests drilling on the OCS and general procedures on acquiring a permit for a test.
- A report will be prepared which describes the process of securing a G&G permit for offshore lands. It will describe the process and report on past statistics.
- A prototype resource report will be initiated. This report will discuss the resource estimates generated for a specific leasing proposal, the rationale behind the estimates, and a discussion of the general factors composing the estimates.

2. Production of Regional G&G Maps and Analyses ($2,312,000)

The objective of this subelement is the development of maps identifying areas favorable for the accumulation of hydrocarbons and the analysis of the geologic history and processes involved in the formation and distribution of offshore resources. These maps and data are the basis for the Geology Report used in development of the 5-Year Program, the early stages of the leasing process, and later for individual proposed sales as input to the resource economic evaluation process.

The primary objective for the production of regional G&G maps and analyses is to provide preliminary reconnaissance of the planning area in preparation for proposed lease sales. This is done by analyzing technical and scientific data and information in order to develop a basic knowledge of the geologic history and its effects on hydrocarbon generation, distribution, and accumulation within the planning area. This knowledge provides the basis for the Geology Report and associated maps, which are the initial technical analyses in the early stages of the leasing process that describe the geology, geologic risk, and resource potential of the planning area.

The Geology Report consists of a regional geology Section, a petroleum geology section, and an environmental geology section that includes a general description of potential geohazards. Release of the Geology Report generally precedes the Call for Information and Nominations by approximately two months. The data, information, and analyses in the Geology Report are updated and used in the leasing process as input to the National Environmental Policy Act (NEPA) documents, the Exploration and Development (E&D) Report, and other MMS and Department decision and option documents. The maps and information also support preparation of resource estimates and analyses carried out in the Area Identification and prospect evaluation process. Once an initial Geology Report is prepared for a planning area, it is updated with new or additional data, as appropriate, to prepare geology reports for succeeding sale proposals in the same planning area.

Description of Subelement Products

a. Geology Report

This report consists of the following specific sections:

- The Regional Geology section describes the general geology and geologic history of the planning area. This provides the basic understanding of the geology and the resource occurrence and potential of the area.

- The petroleum geology section analyzes and provides data and information on the resource potential, probability of hydrocarbon occurrence and items such as source and reservoir rock, traps, and maturation.

- The environmental geology section provides general information over the planning area about potential shallow geologic features, such as shallow faults, accumulations of shallow gas, and slumps which could be hazardous to exploration and development operations. This section also provides information on the occurrence of ice and ice hazards, if any, and seismic and volcanic activity.

b. Determinations of Area of Hydrocarbon Potential

Maps and associated documents are required prior to the issuance of the Call for Information and Nominations to identify those portions of the planning area having various ranges of hydrocarbon potential. This information represents a significant refinement to that contained in the Geology Report, which describes general geologic aspects of the entire planning area.

To initiate action on a lease offering, it is necessary to determine which specific areas, within a planning area, have potential for oil and gas accumulation. This effort goes beyond the analysis of G&G data. The identification of the Area of Hydrocarbon Potential provides a basis for industry and public reaction during the Call for Information and Nominations and must be completed two months prior to its issuance.

c. Recommendations for Area Identification

A significant step in the leasing decision process is the identification of the prospective portion of the planning area proposed to be offered for lease from a hydrocarbon occurrence and leasing interest perspective. Area Identification typically occurs three months after the Call for Information and Nominations is issued. In response to the Call, industry, the public, and other interested parties submit information to MMS on any areas within the Call area which should or should not be included in the proposed sale.

The information and knowledge of the hydrocarbon potential in the planning area developed in the MMS Resource Evaluation Program are combined with information on industry interest and priorities and then weighed against environmental, economic, and defense concerns to identify the specific area to be included in the proposed sale. This area is the focus of the analysis in the NEPA documents.

Recent activities and accomplishments for this subelement include:

- Resource evaluation scientists published a series of regional cross-sections and maps in the Gulf of Mexico OCS. Over 40 oil companies and geophysical contracting companies active in the Gulf of Mexico granted permission for use of their proprietary data in support of this effort.
- Geologic Appendix for "Estimates of Undiscovered Economically Recoverable Oil and Gas Resources for the OCS as of January 1987" completed in FY 1989. This report is scheduled for release in FY 1990.

- A COST Well publication will be prepared and completed in FY 1990 to discuss the purpose of the deep stratigraphic test program and how it relates to the overall goals of the Resource Evaluation program. Included in it will be discussions of permitting, regulations, and summaries of drilling results.

3. Production of Tract and Prospect Specific Maps and Analyses ($6,459,000)

This subelement consists of detailed G&G mapping and analysis of tracts, either individually or by prospects, in order to estimate their resource potential. Maps, data, and analyses form the basis for determining parameters that serve as inputs to the resource estimation process and the post-sale evaluation process for assessing bid adequacy.

Description of Subelement Products

a. Completed sales: Maps and analyses associated with those oil and gas lease sales which are scheduled to be held during FY 1990 and FY 1991.

b. Sales in progress: Maps and analyses for oil and gas lease sales proposed beyond FY 1991. Generally, work devoted to mapping and analysis of tracts commences two years prior to a proposed lease sale, with the exception of sales in the Gulf of Mexico, where mapping and analysis begin one year prior to the sale.

4. Development of Estimates of Undiscovered Resources for Planning Areas ($1,001,000)

Economic and engineering analyses, supplemented by geologic and geophysical analyses, are carried out to develop estimates of undiscovered technologically and economically recoverable resources for the OCS. These analyses are conducted for planning areas, proposed lease sales and alternatives, Secretarial Issue Documents (SID's), and the OCS Information Program. These activities include the economic and engineering analyses needed for resource assessment. Products can be divided into those related to planning areas and those related to proposed lease sale areas. Those initially developed for planning areas are updated, as appropriate, with new or additional data for succeeding proposed sales in the same planning area.

Description of Subelement Products

a. Section 606 Reports: Resource estimates are developed for biennial reports to Congress containing estimates of undiscovered recoverable oil and gas resources and known reserves in the OCS as required by Section 606 of the OCSLAA.

b. Review of 5-Year Leasing Schedule: Planning area resource estimates are also developed for use in the annual review of the 5-Year OCS Program and any subsequent development of a new 5-year program

c. **NEPA and Decision Documents: Lease sale area resource estimates are developed for use in E&D reports, NEPA documents and other decision documents, as well as summary reports and updates produced by the OCS information program.**

- The Presidential Task Force (PTF) was mandated to examine in detail the concerns over adverse impacts of sales in three environmentally sensitive areas. The National Academy of Sciences (NAS) was contracted to provide the PTF with a scientific and technical analyses of potential hydrocarbon resources and potential environmental impacts associated with development of those resources. MMS has been working with both the PTF working group and the NAS subcommittees investigating the adequacy of MMS's hydrocarbon resource assessment during the past year. The initial NAS National Research Council reports were submitted in October, 1989. Their comments are being analyzed for possible means of improving MMS's hydrocarbon assessment techniques.

- MMS has participated in multi-agency briefings presented to the PTF working group and is actively facilitating the NAS subcommittees' analysis of the MMS resource assessment process, both at headquarters and in the regions.

Recent activities and accomplishments for this subelement include:

- A report entitled "Estimates of Undiscovered Economically Recoverable Oil and Gas Resources for the Outer Continental Shelf as of January 1987" is in progress. This publication, scheduled for release in FY 1990, presents updated offshore resource estimates by planning area and describes methodology used in performing the assessment.
- In FY 1990, a Committee of the National Academy of Sciences will complete a comprehensive study of the resource assessment methodology utilized by MMS. The final report will analyze the methodology and outline enhancements for future consideration.
- Estimates will be derived for numerous leasing options and subareas of the OCS being addressed by the new 5-Year Program for the period commencing in mid-1992 and ending in 1997. In addition to estimates of the occurrence of oil and gas in the areas being addressed by the various alternatives, estimates of the potential amounts of oil and gas that may be leased in each proposed sale are being developed.

5. Reserve Inventory ($1,576,000)

The primary objective of the reserve inventory subelement is to develop and maintain estimates of oil and gas reserves as mandated by the OCSLAA. Reserve inventories are generated from well and reservoir data and tabulated by individual field, reservoir, and lease. The analyses and mapping associated with reserve estimates directly support field and reservoir development and provide geological and engineering data required for lease sale evaluations. Reserve estimates support the leasing process, future energy leasing policy analyses and decisions, and oil and gas assessment for projecting energy supplies as they relate to the national security of the United States.

Description of Subelement Products

Field Reserve Estimates: Estimates of oil and gas reserves are developed for new field discoveries as well as the updating of information on remaining reserves in previously inventoried fields.

Recent activities and accomplishments for this subelement include:

- MMS published two reports during 1989 which revised estimates of the remaining recoverable reserves for the Federal Outer Continental Shelf. OCS Report (MMS 89-0074) reported that recoverable reserves for the Federal portion of the Gulf of Mexico as of December 31, 1988, are estimated at 3.39 billion barrels of oil and 42.4 trillion cubic feet of gas. OCS Report (MMS 89-0085) reported that recoverable reserves for the Federal portion of the Pacific OCS as of December 31, 1988, are estimated at 1.30 billion barrels of oil and 2.04 trillion cubic feet of gas.

- In FY 1989, MMS revised its reserve categories to comply with industry-wide definitions developed by the Society of Petroleum Engineers and being advocated for use by industry, Government and other appropriate parties. The Reserve Inventory function will continue providing estimates of new field discoveries and updated reserve estimates in those fields previously inventoried. However, emphasis is now placed upon those fields containing the larger remaining recoverable reserves.

6. Economic and Engineering Evaluations of Potential Hydrocarbon Resources ($1,289,000)

Economic and engineering parameters, on a regional and tract-specific basis, are analyzed, developed, and designed for the purpose of determining bid adequacy and assessing impacts on the objectives of the OCSLAA. These parameters include: oil and gas prices; inflation and discount rates; exploration, development, production, and transportation costs; supply and demand, and number of platforms, wells, and subsea completions; well productivity and infrastructure scheduling.

Description of Subelement Products

a. E&D Reports: These reports contain infrastructure and exploration, development, and production scenarios that serve as the basis of the analyses related to the NEPA process. The reports are updated during the leasing process and are used for the design of the specific bidding system to be used in the sale.

b. Cost Estimates and Price Assumptions: These are prepared for lease sales in each fiscal year and include: oil and gas prices; transportation costs (pipeline, tanker, etc.); real price increases; inflation and discount rates; and exploration, development, production, and transportation costs.

c. Bidding System Design: This activity consists of analyses to support designation of bidding systems, lease terms, rental policies, and minimum bid requirements for a particular lease sale. Unique lease-sale costs and market conditions require examination of the various revenue components which comprise a bidding system. An analysis is made of the impacts of alternative royalty rates, minimum bid requirements, rental policy, length of lease terms, etc., on the multiple goals of the OCSLAA, such as the maintenance of competition and expeditious exploration, development and production. In addition, an analysis of the impacts of existing leases issued under alternative systems are reviewed in terms of newly arising information on exploration and development effects.

d. Fair Market Value Determinations: These are decisions regarding the adequacy of high bids received at a sale. This includes determinations of viable prospects and tract types, tract-specific resource economic values, when required, and the development and analysis of economic criteria to determine the final acceptance or rejection of high bids.

e. Economic Value Estimates: This product includes cost/benefit analyses and economic and social value estimates for SID's, the formulation of the 5-Year Program Schedule, each proposed lease sale (including alternatives considered), revenue projections for budget purposes, and other estimates associated with statutory or policy changes (e.g. leasing and drilling moratoria).

Recent activities and accomplishments for this subelement include:

- Development of procedures and resource assessment models for the potential leasing of gold or other non-energy minerals offshore Alaska and sand and gravel in the Gulf of Mexico.
- Formal guidance was provided to regions for consistent methodologies for determining viable/non-viable prospects for tract evaluations.
- Studies are being performed which focus on encouraging exploration in frontier areas. New strategies will be required because of current market conditions and earlier exploration disappointments.
- Studies are being performed related to environmental costs and infrastructure in the Pacific with particular attention given to air quality.

- Resource assessment models normally utilized for estimating potential oil and gas accumulations were modified for use in estimating potential undiscovered amounts of sulphur in the Gulf of Mexico. In a similar manner, a model was developed incorporating MMS evaluation policies to evaluate industry bids for hard minerals leases.

- Several economic value estimates have been made to project the effects of proposed moratoria on leasing and drilling and statutory changes affecting lease sales and bidder eligibility.

- Several studies have been carried out to evaluate the future economic viability of natural gas from offshore areas in the Alaska OCS in support of MMS leasing decisions.

7. Geologic, Economic, and Engineering Methodologies and Studies for the OCS Leasing Program ($1,568,000)

Advanced computer models and ADP systems and data bases are analyzed, designed, maintained, and updated to serve as the primary support for the conduct of economic and engineering studies that are used throughout the resource assessment process and for overall OCS program and policy issues. Activities in this support function are generic in nature and are described below.

Description of Subelement Products

a. Economic Studies.

  - Development, refinement, modification, and maintenance of discounted cash flow and resource assessment computer models and methodologies, including the design of new computer models for resource assessment and resource economic evaluation.

  - Design, development, refinement, maintenance, and update of ADP data bases and systems to support lease sale fair market value determinations, and to provide a historical data base for economic studies, other analyses, and reports such as the Annual Report to Congress on bidding systems and competition.

  - Recommendations on leasing policy for the overall program and for each offering, economic studies are conducted on specific bidding system parameters such as royalty rates, minimum bid levels, regulatory changes, lease terms, rental policies, and tract size.

  - Various generic, program-wide studies applicable to the entire leasing process are performed. Study issues include the costs and benefits associated with the OCS program, bid adequacy procedures, and effects of various policies on Government receipts.

- Economic Value Estimates and Cost/Benefit Studies for Formulation of the 5-year OCS Leasing Schedule. These are economic value estimates and cost/benefit studies for use in developing new 5-year leasing schedules or the required annual review. In addition, bonus revenues are estimated.

- Social Cost Estimates for Formulation of the 5-year OCS Leasing Schedule. These are estimates of the costs to lessees of complying with the offshore regulatory program; the potential costs offsetting adverse effects; and the damages associated with unavoidable adverse effects.

- Development and drafting of the "Alternative Energy" appendix to the Environmental Report on Mobil Oil Company's Exploration plan for drilling off the North Carolina coast. Alternative energy was one of the chief concerns of North Carolina. An agreement was reached between MMS, North Carolina, and Mobil to conduct an environmental review prior to issuing a drilling permit.

b. Engineering Studies: Consistent and pertinent program-wide technological procedures are designed, developed, and implemented, and technology for adverse and severe conditions is assessed.

These studies are used in the development of the resource evaluation computer programs and in the estimation of inputs for the program.

c. Geologic Studies: Analyses of geologic characteristics and size of oil and gas accumulations in similar geologic conditions on a worldwide basis necessary to better estimate the number, size, and recoverability of undiscovered and discovered resources on offshore planning basins where data quality, quantity, or other factors may be supplemented by such data. These studies are used in the development and testing of new resource assessment computer programs to evaluate technically or economically recoverable resources.

Recent activities and accomplishments for this subelement include:

- The Post-sale Analysis System (PSAS) was converted to process offshore sale-related information on a microcomputer, in FY 1988. During FY 1989, the system was used to generate reports on bidding data, company bidding performance, and acreage bid on and leased at offshore lease sales. These reports will continue to be used for developing recommendations to accept/reject bids and for review by the Department of Justice and the Federal Trade Commission for possible antitrust problems.

- The Offshore Lease Data System (OLDS) is a centralized database management system which interacts with other nationwide systems to store historical offshore lease sale information in order to answer queries or conduct economic and statistical analysis. Inquiries from the Department, Congress, and the public have been responded to during FY 1989 and continued use of OLDS is expected.

- TSL-80 is an economic simulation model that permits costs, resource levels, minimum bid levels, and risk factors to be inputted and recommends the preferable bidding system to lease specific tracts in offshore sales. This model has been used extensively in individual planning areas in preparing for sales on the current schedule and will be used extensively in preparing the next 5-year SID in FY 1990 and 1991.

- A generic industry model (IMODEL) continues to forecast the response of the oil and gas industry to various schedules for OCS lease sales. It estimates tracts bid on and bonus received for each sale. This model has been and is used to estimate bonus revenues in offshore sales for budget purposes.

- Spreadsheets normally used to estimate sale specific net economic values are being modified to be used for aggregate planning area analysis for the FY 1992 5-Year program.

- The Revenue Model is a spread sheet model that was developed to understand how the economic measures of a tract are affected by an economic parameter change or a change in the timing of leasing or exploration. The model is used to estimate bonuses, royalties, taxes as well as Net Economic Value for a particular set of economic conditions or for a particular sale.

- Discounted cash flow methodologies models normally utilized for estimating the value of oil and gas leases are being used in models for non-energy minerals sales (e.g., an Alaskan gold sale, a Gulf of Mexico (GOM) sand and gravel sale, and a GOM sulphur sale). Policy-related documents are being developed for the gold or other non-energy minerals sales to support the leasing conditions used in the sales.

- A statistical book called Sale Statistics was developed to answer frequently asked questions relating to bidding information for offshore lease sales, eliminating the need to query an on-line database in all instances. It contains summary tables, figures, individual sale data, and a glossary of terms. It encompasses sales from December 1979 through 1986; 1987 through 1989 sale statistics will be added early in FY 1990.

- Montcar (MMS tract evaluation model) has been updated with the latest tangibles/tax intangibles treatment and has been converted from the mainframe environment to personal computers thereby ensuring greater security and decrease in ADP expenditures.

- Continued modifications of PRESTO (MMS resource assessment model) with economic and engineering input capability and multi-planning area aggregation capability.
- Modification of existing Bureau of Mines and State of Alaska computer models are being evaluated for possible use in anticipated future sales of OCS non-energy minerals. Concurrently, efforts are underway to develop a model specifically addressing offshore dredging as a means of developing offshore gold placers for possible use in the planned FY 1991 Norton Sound Sale of non-energy minerals.

8. Program Management and Support ($3,813,000)

This subelement provides program guidance and direction, internal and external coordination of OCS program activities and program and technical support for the work of the Resource Evaluation Program. Policy guidance and program direction are provided by the Associate Director for Offshore Minerals Management, the Deputy Associate Director for Offshore Leasing, Regional Directors, the Office of Information and Publications, and the Office of Offshore Management Support. Included in the Office of Offshore Management Support is the Offshore Systems Center which centrally reviews all of Offshore's ADP procurement and major systems design, standardizes data elements for all Offshore regions and headquarters offices, prepares activity reports and develops the ADP Strategic Plan. Cartographic, editorial, and other program support duties are provided by support staffs within each region and are funded within this subelement.

Other Programs

Cooperative Agreement: Texas Bureau of Economic Geology ($540,000)

In an effort to broaden the base of data and information available to MMS on offshore lands, MMS entered into a cooperative agreement with the Texas Bureau of Economic Geology (BEG), University of Texas at Austin, in September 1983. The BEG acts as a central contact between MMS and the geological surveys of coastal States and monitors multidiscipline, scientific activities conducted by the surveys for MMS. The general area that the cooperative effort addresses is geologic studies relating to hydrocarbon and solid mineral resources. In FY 1991, approximately 23 coastal States will participate in the program. Proceedings of the Second Continental Margins Symposium, held in May 1989, are scheduled for publication in FY 1990.

Strategic and International Minerals ($1,662,000)

MMS has established cooperative agreements with the States of Hawaii, North Carolina, Georgia, Mississippi, Alabama, Louisiana, Texas, Alaska, and Oregon for the joint analysis of marine mineral resources and environmental consequences of potential marine mineral leasing.

Offshore areas within the jurisdiction of the United States are identified and investigated for the development potential of minerals other than oil, gas, and sulphur.

State response to the task force approach has been positive. The Hawaii joint planning approach has been commended by the Governor and by an organization representing the State. The Alaska/Federal Coordination Team has worked successfully to resolve public concerns and is proceeding with presale steps for the proposed Norton Sound minerals sale. The work of the Gulf of Mexico task force has been noteworthy in providing Louisiana with a promising option for dealing with its barrier island/wetland loss problem.

In FY 1991, the primary thrust of this program will be the continuation of ongoing studies of marine mineral resources, such as cobalt-rich manganese crusts, heavy mineral-placers, phosphorites, sand and gravel, and carbonate sands, to determine whether future lease sales of these resources are indicated. The studies will generally begin as resource evaluations and feasibility assessments, advancing to more detailed mineral-and site-specific resource and environmental impact evaluations where near-term commercial potential and industry interest are demonstrated. Comments from affected States and interested parties would be solicited through the Notice of Intent and the publication and hearings on NEPA documents. After receiving comments, decision material would be prepared, decisions made, and if indicated, a Notice of Sale would be published in the Federal Register. On a more specific basis, positive industry interest would lead to expanded efforts to characterize cobalt resources in the Hawaiian island area through FY 1991. Oregon offshore placer potential studies will focus on the Cape Blanco area for the next year. The evaluation of Ship Shoal as a sand source for Louisiana barrier island beach renourishment should conclude early in FY 1991 and would be followed by an implementation phase if appropriate. It is not certain whether coring and seismic work for phosphorite delineation offshore Georgia will carry over into FY 1991.

Two new initiatives are possible for FY 1991. MMS has received inquiries relating to the New England States, New York-New Jersey and Mid-Atlantic (Virginia) areas that could result in the formation of joint Federal/State task forces or similar coordinative mechanisms. Once formed, the Northeastern States task forces would address development of sand and gravel resources and the Virginia task force would address heavy mineral placer deposits which are known to occur east of the mouth of the Chesapeake Bay. Increased industry interest in phosphate deposits offshore North Carolina and/or Georgia could also lead to presale activities in those areas.

SELECTED WORKLOAD OUTPUTS

A summary of selected workload outputs in the Resource Evaluation Program by subelement is presented in the following table:

	FY 1989 Actual	FY 1990 Estimate	FY 1991	Inc. (+) Dec. (-)
1. Acquisition of G&G Data:				
o G&G permits processed and approved	238	259	261	+ 2
o G&G data acquisition actions	62	48	56	+ 8
o Line miles of CDP data acquired	52,150	55,000	62,000	+ 7,000
2. Production of regional G&G maps and analyses:				
o Geology reports	7	5	9	+ 4
o Determination of area of hydrocarbon potential	7	6	9	+ 3
o Area identification recommendations	7	6	9	+ 3
3. Production of tract- and prospect-specific maps & analyses:				
o Completed sales	3	2	7	+ 5
o Sales in progress	12	14	16	+ 2
4. Development of estimates of undiscovered resources for planning areas:				
o Section 606 reports	2	1	2	+ 1
o Review of 5-Year Leasing Schedule	1	1	1	--
o NEPA and decision documents	9	9	14	+ 5
5. Reserve inventory:				
o Field reserve estimates	65	50	48	- 2
6. Economic and engineering evaluations of potential hydrocarbon resources:				
o E&D reports	12	8	7	- 1
o Cost estimates and price assumptions	6	4	9	+ 5
o Bidding system design analyses	2	4	8	+ 4
o Fair market value determinations	3	2	7	+ 5
o Economic value estimates	14	12	23	+ 11

	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate	Inc. (+) Dec. (-)
7. Geologic, economic and engineering methodologies and studies for the OCS leasing program:				
o Geologic studies	10	10	10	---
o Economic studies	25	25	25	---
o Engineering studies	15	12	16	+ 4

Changes from FY 1991 Base:

(Dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
$	22,504	22,504	---
(FTE)	(344)	(343)	(-1)

Maintenance of Perkin-Elmer Computer System (+26,000)

An increase of $26,000 in the Resource Evaluation subactivity is needed for increased maintenance costs of the Perkin-Elmer computers, which support many OCS programs, including the Offshore Mapping System. (See discussion in the corresponding increase statement under Leasing and Environment.)

Distribution of change by object class

The object class detail for the proposed change is as follows:

	Amount ($000)
Other Services..	+26
Total..	+26

Centralized Training (-$26,000, -1 FTE)

A transfer of $26,000 and one FTE is being made to the Administrative Operations subactivity of the General Administration budget activity due to the centralization of certain training activities. This transfer is discussed in detail in the increase statement for the Administrative Operations subactivity.

Distribution of change by object class

The object class detail for the proposed change is as follows:

	Amount ($000)
Personnel Compensation..............................	-14
Personnel Benefits..................................	-2
Travel..	-2
Other Services......................................	-8
Total..	-26

Justification of Program and Performance

Activity: Outer Continental Shelf Lands
Subactivity: Regulatory Program

(Dollar amounts in thousands)

Program Element		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc.(+) Dec.(-) from Base
Regulation of Operations	$	27,826	27,613	28,194	29,333	+1,139
	(FTE)	(403)	(403)	(402)	(402)	(---)
Technology Assessment and Research	$	1,864	1,650	1,634	2,095	+461
	(FTE)	(---)	(---)	(---)	(---)	(---)
Oil and Gas Information	$	873	873	879	879	---
	(FTE)	(7)	(7)	(7)	(7)	(---)
Total Requirements	$	30,563[1]	30,136	30,707	32,307	+1,600
	(FTE)	(410)	(410)	(409)	(409)	(---)

Impact of Public Law 99-177

(In thousands of dollars)

FY 1990 Enacted To Date	P.L. 99-177 B. A. Cancellation	FY 1990 Adjusted Appropriation
30,563[1]	-427	30,136

A reduction of $427,000 in the FY 1990 Regulatory Program will be accomplished by reductions in two general areas. A reduction of $213,000 would be applied to helicopter funding and will reduce inspection activity. This action also reduces the number of inspections since less flight time is available.

The second area affected by the reduction will be the Technology Assessment and Research Program. A $200,000 reduction will eliminate or curtail investigations which support MMS operations in safety and pollution prevention and cleanup. These projects pertain to: reduction of air emissions from offshore activities; funding the reactivation of the Oil and Hazardous Materials Simulated Test Tank (OHMSETT) Facility; improved beachline cleanup; and structural integrity of platforms in hostile environments. These projects will be stretched out over a longer time of completion, delaying the use of technical results in developing improved regulations. A reduction of $14,000 in the FY 1990 oil spill studies funding will be accomplished by limiting

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[1] See Footnote on page MMS-22.

contract support of one of the larger multi-year contracts. This reduction should not significantly delay any of the major milestones and goals within a three to five year period.

Objectives

- **To ensure safe operations, protection of the environment, and conservation of natural resources by regulating OCS oil, gas and marine nonenergy minerals exploration, development, and production operations.**
- To provide a technical basis and methodology for the determination of reliability and risk associated with OCS operations.
- To develop a comprehensive technology base to support the supervision of leasehold operations, including the use of best available and safest technologies (OCSLA Sec. 21(b)).
- To provide information concerning OCS oil and gas and other mineral activities to affected State and local governments and the public.

The Regulatory Program consists of the following separate program elements: Regulation of Operations; Technology Assessment and Research; and Oil and Gas Information.

Regulation of Operations

Objectives

- To assure safe and environmentally sound OCS development through careful regulation of activities such as exploration, development, and production operations, the transportation of production to shore, and pipeline design and maintenance.
- To conduct an inspection and enforcement program which ensures that operations on the OCS are conducted in compliance with regulations and, in the absence of full compliance, generates information needed for implementation of effective civil and criminal penalty programs.
- To provide operators with information enabling them to develop improved operating practices by developing and implementing accident investigation procedures.
- To provide affected States, other Federal Agencies, and the public with ample opportunity for participation in the decision making process during the review and approval of lessee-submitted exploration plans and development and production plans.

- To avoid waste of hydrocarbons through regulation of unitization agreements, maximum efficient rates of production, verification of shut-in wells, flaring of gas, suspensions of production, and the use of enhanced recovery techniques.
- To ensure that Minerals Management Service regulations and management systems for leasing and mining of nonenergy minerals provide for safe operations, protection of the environment, and conservation of natural resources.
- To ensure protection of public interests by determining pricing categories for natural gas production from new leases, new reservoirs on existing leases, high cost natural gas reservoirs, and stripper wells.

Program Description

Regulation of the OCS oil, gas, and marine minerals Operations Program provides for safe operations, protection of the environment, and conservation of natural resources through the comprehensive and systematic review, approval, and oversight of lessee-conducted exploration, development, and production operations on the OCS. This is accomplished through the review and approval or disapproval, if appropriate, of exploration plans, development and production plans, and development operations coordination documents; the review of applications for and issuance of permits to conduct such activities; the inspection of lessee-conducted activities; and the taking of appropriate enforcement actions when activities are not conducted in compliance with the governing requirements. It also is accomplished through training of industry personnel engaged in all aspects of activities on the OCS in matters concerning safety, environmental protection, and conservation of natural resources.

Mandated responsibilities require: coordination of approvals of OCS exploration plans and development and production plans with the affected States; conducting scheduled annual inspections and intermittent unscheduled inspections to ensure regulatory compliance; the shutdown of facilities not in compliance when necessary to ensure safety, environmental protection, and conservation of natural resources; and the establishment and implementation of a civil penalties program through which the Minerals Management Service may assess and collect monetary penalties.

Oil and gas produced from the OCS contribute significantly to the Nation's current and future energy supplies and to the Nation's objectives to reduce dependency on foreign sources of energy. Production from the OCS has only been established in the Gulf of Mexico and in the Pacific Ocean off southern California. Exploration drilling has been conducted off Alaska with some success and off the Atlantic coast with noneconomic results. However, exploratory activity is expected to continue. Off the coast of California, production is on the increase. Discoveries made in the Santa Maria Basin have given rise to even more exploratory drilling and to the submission of additional development and production plans.

Oil and gas reserves are increasing in the Gulf of Mexico. Significant discoveries in deep water areas of the Gulf of Mexico are expected to continue to contribute to these reserves. Leases off the Alaskan Arctic coast will continue to be subjects of near-term exploration drilling. The Arctic area is highly promising and could lead to prolific discoveries ready for development and production in the late 1990's. The environments of the deep water areas and the Arctic areas will provide technical challenges and the Minerals Management Service must maintain the expertise necessary to ensure safety and environmental protection during these operations.

The four major subelements of the Regulation of Operations program element and their products are described on the following pages:

Major Subelements and Subelement Products:

1. Exploration and Production Review and Approval ($5,088,000)

The objective of this subelement is the review and approval of plans and applications related to all aspects of operations, i.e., drilling, producing, developing, flaring, commingling, unitizing, etc., in the interest of ensuring the conduct of safe, environmentally sound, and workmanlike operations. This work is also conducted in the interest of ensuring that responsible and prudent production and conservation practices are followed in the production, depletion, drainage, transportation, and measurement of produced hydrocarbons, in accordance with applicable Regulations and Notices to Lessees and Operators.

Description of Subelement Products

a. Exploration and Development Plans Processed

o Lease Plans

The OCS Lands Act, as amended, and the implementing Regulation 30 CFR 250.34 require OCS operators to prepare and submit to the Minerals Management Service, for approval, an Exploration Plan (EP), a Development and Production Plan (DPP) or a Development Operations Coordination Document (DOCD) prior to commencing exploratory or development operations, respectively.

Generally, after an operator acquires an OCS lease, the initial step to be taken is the drilling of one or more wells in an attempt to determine whether the lease contains oil or natural gas in commercial quantities. However, such exploration of a lease can begin only after the operator has submitted a EP and received approval of it by the Minerals Management Service.

Each EP includes an Environmental Report (ER). A typical EP includes a description of the proposed activities together with a schedule of the activities, a description of the major equipment to be used, a discussion of safety and pollution-control features and an oil spill contingency plan, a map showing the location of each well, a map showing appropriate geological formations, and a discussion of potential geological or man-made drilling hazards. The ER addresses the potential environmental effects of the proposed activity.

After an EP is received, the Minerals Management Service performs a technical review of the plan. This review includes, in part, verification that the operations are to be conducted using sound engineering practices, that the proposed locations for drilling activities are free of potential hazards, and that the operations will not interfere unduly with other uses of the OCS, such as shipping, fishing, and military activities.

The Minerals Management Service also performs an environmental assessment (EA) of each plan. This review ensures that potential impacts on air and water quality, endangered species, cultural resources, undersea biological features, and live-bottom areas are minimized. The Minerals Management Service's environmental scientists prepare appropriate documentation for each plan to determine compliance of the proposed activities with the requirements of the National Environmental Policy Act of 1969. Any modifications of a plan required as a result of the technical or environmental review must be made by the operator prior to approval of the plan.

If an exploratory program is successful, the operator then must submit to the Minerals Management Service for approval a DPP or a Development Operations Coordination Document (DOCD) prior to drilling development wells or installing fixed production platforms, pipelines, or production equipment. In the Western Gulf of Mexico, a DOCD is required in lieu of a DPP, per 43 U.S.C. 1351.

A typical DPP or DOCD for lease operations in the Gulf of Mexico includes most of the items which are required for a EP in addition to a description of any fixed structures and production equipment to be used and a discussion of the hydrocarbons discovered, including expected production rates and the anticipated time to produce the reserves. As with EP's, the Minerals Management Service performs an extensive technical and environmental review of DPP's and DOCD's. Any modifications required as a result of this review must be made prior to approval.

Another important function of the EP, DPP, and DOCD program is to satisfy the requirements of the Coastal Zone Management (CZM) Act of 1972, as amended. The CZM Act requires all Federal agencies which regulate activities that affect the coastal zone to cooperate and participate with State and local governments by assisting them to effectively exercise their responsibilities of managing the coastal zone. The EA contains information that is utilized by State officials in the formulation of decisions pertaining to the use of land and water resources of their coastal zone, with full consideration being given in such decisions to ecological, cultural, historic, and aesthetic values, as well as economic development. During the Minerals Management Service review process, plans and accompanying EA's are transmitted to the affected States. The Minerals Management Service does not approve DPP or DOCD's until the State has concurred that the activities proposed in the plan are consistent with its CZM plan. The Minerals Management Service may approve the EP prior to the plan receiving a consistency concurrence, but no drilling is permitted until concurrence is received or consistency is presumed pursuant to failure of timely action by the State.

Approval of a plan does not constitute final approval to conduct any specific operations associated with the plan. Such specific operations require that operators file with the Minerals Management Service an individual Application for Permit to Drill (APD) for each activity, which describes in detail how the activity is to be performed, and receive approval from the Minerals Management Service before actual operations can begin. Approval of the plan constitutes general approval of the activities. Activities which are later permitted must agree with those in the approved plan.

o Unit Plans

Unitization agreements provide for exploration, development, and production of minerals from individual OCS leases as single consolidated entities without regard to separate ownership, and for the allocation of costs and benefits on a basis defined in the agreements. The unitization agreement is the contract that modifies the terms of the committed lease contracts and consolidates them to form the unit.

The unit operator for each approved unit is required to submit, annually, a plan of exploration or development and production, depending on the type of agreement. The Minerals Management Service monitors unit activity by reviewing these plans to ensure proper and timely exploration or development.

b. Permitting

o Processing of Applications for Permit to Drill, Workover, Recomplete, and Abandon

Applications for Permit to initially drill a well require completion and submittal of Form MMS-331-C, supported by a detailed well plan including procedures and schematic drawings giving well location, directional plan casing procedures, cementing program, mud program, etc. Applications to deepen, redrill, plug back, workover, recomplete, or abandon require completion and submittal of Form MMS-331, Sundry Notices and Reports on Wells, supported by detailed plans, procedures, depths, drawings, etc. Prior to approval, each such application or proposal is thoroughly reviewed from the technical, engineering, and regulatory viewpoints to ascertain compliance with regulations in order to ensure safety and protection of personnel and environmental resources.

Although the number of drilling applications currently being received is less than the number during the peak oil price period, it is anticipated that drilling activity will continue to increase along with oil prices in FY 1991. The workload related to workovers will continue to increase in FY 1991 as a result of more strenuous workover requirements contained in the current OCS regulations. Recent FY 1989 lease sales activity is another indicator of increasing operations when compared to the past few years.

o Platform Installation Applications Processed

Provisions in 30 CFR 250 Subpart I, Platforms and Structures, requires that an operator submit to the Minerals Management Service for approval, applications for the installation of new bottom founded or fixed platforms and applications for significant modifications to applications that have already been approved. All new platforms or other structures are required to be designed, fabricated, installed, and inspected in accordance with these requirements. These requirements are intended to minimize occurrences of platform failures from conditions such as hurricanes, earthquakes, ice, other natural hazards, and boat collisions that may endanger life or health or cause damage to the environment.

Each platform application or significant modification to an approved application is reviewed by geologists, geophysicists, structural engineers, and other appropriate staff, including oceanographers. They review the design and design criteria of the platform to ensure that it is appropriate for the expected environmental and operating conditions, to ensure that the platform can withstand the loads to which it may be exposed, both during and after its transportation and installation, to ascertain the projected influence of the soil conditions and other factors on the stability of the platform, and the steps to be taken to protect against corrosion.

In addition, platforms which are to be installed in water depths exceeding 400 feet; have natural wave periods greater than three seconds; are to be installed in areas of unstable bottom conditions; have designs not previously proven for use; or are to be installed in seismically active areas, require approval under the Platform Verification Program. The Platform Verification Program requires more detailed review by the Minerals Management Service and the review and approval of a third party verification agent who provides an independent engineering assessment of the design, fabrication, and transportation and installation of the platform.

- Pipeline Applications Processed

  Provisions in 30 CFR 250 Subpart J, Pipelines and Pipeline Rights-of-Way, require that an operator or right-of-way grant holder submit to the Minerals Management Service for approval applications for the design, other features, and plan of installation of all pipelines authorized under any lease or pipeline right-of-way. All pipelines and associated valves, flanges, and fittings are required to be designed, installed, operated, maintained, and abandoned in a manner which assures the safe and pollution-free transportation of fluids without unduly interfering with other uses of the OCS.

  Each new pipeline application is reviewed by a petroleum engineer and environmental scientist. A petroleum engineer reviews the pipeline design to ensure that meets the operating requirements previously enumerated. An environmental scientist conducts a review to assess the projected effects of the construction and operation of the pipeline to determine and document compliance with Federal environmental protection statutes.

  In addition to the preceding requirements, when a pipeline qualifies as a right-of-way pipeline, the pipeline cannot be installed until right-of-way approval has been requested and granted. Right-of-way grants are issued pursuant to Section 5(e) of the OCS Lands Act.

  In addition to applications for new pipelines, operators and right-of-way grant holders are required to submit applications for approval for modification or repair of existing pipelines.

- Suspension of Operations

  Suspensions of Operations (SOO) are directed when necessary for safety or environmental reasons or are granted for reasons in the national interest which are specified in regulations. The SOO's that have the effect of extending a lease beyond its primary term are granted with due consideration given to difficult or unforeseen problems. These suspensions are approved with the understanding that the lessee will meet all deadlines within approved activity schedules. Once a schedule has been approved, the deadlines are closely monitored to make certain that the lease is placed on production at the earliest possible date.

- Gas Flaring Approvals

  Requests for flaring or venting are reviewed to ensure that unnecessary flaring does not occur and are approved only when requested operations are in accordance with Minerals Management

Service regulations intended to avoid unnecessary loss of natural resources and minimize environmental effects of flaring. Flaring requires written application and written approval. When warranted, such approvals are given for periods up to one year. Emergency requests (e.g., equipment failure, testing, and well purging) are handled by telephone and confirmed with a letter.

o Enhanced Recovery Operation Analysis

Operators submit secondary and tertiary enhanced oil recovery projects consisting of applications together with supporting geologic and engineering data showing that the projects are in the interest of conservation of the natural resources on the OCS. Operators are required to submit annual reports for each approved injection project, including information on the number of days and volume of fluid injected and volume of oil, gas, and water produced. These data are used in reservoir analyses and statistical reports, as well as in monitoring individual injection projects to ensure maximum recovery of hydrocarbons.

o Approval of Safety Systems on New Platforms

Safety systems on production platforms are a primary means of providing for operational and personnel safety and environmental protection. Drawings and schematics of new platform facilities showing production and process equipment, as well as safety and anti-pollution controls and devices, are reviewed for compliance with applicable OCS regulations. Following approval of the facility, these drawings are used to verify that the production system equipment is installed in the field in conformance with the approved plan.

o Production Verification

The Minerals Management Service has begun a nationwide production verification program by assigning additional responsibilities to an existing organizational unit. This nationwide program is designed to ensure that the public interest in OCS minerals is protected. The program is being phased into the current OCS program over a 3-year period that began in FY 1989.

Annual inspections are conducted of all (currently 1,019) onshore and offshore custody transfer liquid meter locations for site security, verification of sales volumes, and compliance with OCS regulations. Minerals Management Service personnel perform onsite production verification and inspections to check discrepancies noted in the records being reviewed. The Minerals Management Service is developing an automated system that would verify crude oil production by analyzing run tickets, meter proving reports and system sales allocation reports on a continuous basis. The system is intended to detect under-reported crude oil production. The Minerals Management Service plans to conduct a pilot gas production verification project in the Gulf of Mexico Region to determine whether a complete gas verification program is needed.

c. Determination and Agreements

o Determination of Reservoir Maximum Efficient Rates (MER) of Production and Well Maximum Producible Rate (MPR)

Well and reservoir production rates are set to provide for conservation of resources and prevention of waste. Requests for MER's and MPR's and supporting information (i.e., structure maps, tests, etc.) are reviewed, and operations are approved in accordance with established OCS regulations implementing rate control policies developed to prevent waste and ensure conservation of oil and gas. MER's are redetermined at least annually for each producing reservoir. MPR's are redetermined at least quarterly for oil wells and at least semiannually for gas wells.

o NGPA Category Determinations

The NGPA category determinations are made on the applications of gas producers, based on engineering and geological evidence, which must conform to specific requirements of the Federal Energy Regulatory Commission (FERC). This office makes determinations which, in effect, set the maximum price a producer can receive for gas produced from a well receiving a category determination. This, in turn, could affect the royalty received by the Government from OCS leases.

o Commingling Agreements

Commingling agreements are reviewed to ensure that such agreements do not result in a reduction in the royalty due to the Federal Government. Commingling applications are submitted when a lessee or lease operator intends to move production from multiple leases to a central facility for the purpose of treating, measuring, and storing this production. The Minerals Management Service approves or disapproves the commingling or mixing for the above purposes. Further, commingling may involve the mixing of production from different wells, leases, and fields, with production of other operators.

o Review Development Activities/Lease Drainage

Federal royalty payments can be affected by drainage across a State/Federal boundary, from unleased land to leased land, or from one lease to a lease with a different royalty rate. To ensure that Federal royalty payments are not reduced as a result of drainage, development and production activities are monitored within and around all Federal leases with royalty rates other than the normal one-sixth, on leases adjacent to unleased land, and on those leases along the State/Federal line.

Recent Activities and Accomplishments for this Subelement Include:

- On September 30, 1989, the Minerals Management Service was monitoring the development and production of 202 active units on the OCS.

- During FY 1989, the Minerals Management Service approved 24 unit agreements (23 for exploration and 1 for development).

- During FY 1989, 413 suspensions of production (SOPs) and 3 suspensions of operations (SOO's) under 30 CFR 250.10 were approved. A total of 115 SOO's were issued due to Lease Stipulation No. 5 which directs extension of operations for leases in the Eastern Gulf of Mexico. As of September 30, 1989, there were 245 leases beyond their primary term with approved SOP's.

- As of September 30, 1989, there were 267 active secondary and tertiary enhanced oil recovery projects on the OCS.

- In FY 1989, the Minerals Management Service processed 4,228 MER/MPR applications, 16,600 Quarterly and Semiannual Well Tests, and 214 NGPA applications, most of which are for the 102(d) category.

2. Inspection and Certification ($14,713,000)

The objective of this subelement is to ensure safe operations, protection of the environment, conservation of natural resources through the inspection of all OCS oil and gas exploration, development, and production activities, the certification of well-control and safety device training programs, and accreditation of safety and pollution prevention equipment. The inspection of OCS operations is required by the OCS Lands Act to ensure compliance with all applicable safety and environmental protection laws and regulations. To measure lessee compliance and to evaluate the inspection program, selected facilities reviews are performed on operations in a specific area. The certification and accreditation programs are instituted to ensure that personnel working on the OCS are properly trained and that certain equipment used on the OCS has a high degree of reliability. These programs have provided positive results in the pursuit of safe operations on the OCS as well as ensuring that the environment is protected.

a. Inspection and Enforcement Activities

- Inspections

  The inspection of OCS operations is a major work unit of the regulatory program. Drilling and production facilities on the OCS are inspected using both scheduled and unannounced inspections.

Scheduled inspections are conducted annually on all facilities and unannounced inspections are conducted on at least 10 percent of all facilities each year. Inspections are conducted utilizing the Minerals Management Service developed National Potential Incident of Noncompliance (PINC) inspection characteristics list. In the scheduled annual inspection, all inspection characteristics pertaining to the operation being inspected are checked. In the unannounced inspections, a minimum of 25 percent of the pertinent PINC's are checked.

Inspections are conducted on drilling, production, measurement, pipeline, workover and completion, and abandonment operations. In addition, there are PINC's which pertain to environmental requirements and other general requirements pertinent to all operations. Drilling inspections are conducted to ensure that the proper equipment is used, sufficient supplies are on location, and proper techniques are followed to maintain control of the well and prevent blowouts, spills, and other accidents in order to protect personnel and the environment and minimize conflicts with other uses of the OCS.

Production inspections are performed to ensure that the proper equipment is used and that it is installed and calibrated correctly to prevent accidents and pollution. Measurement inspections are performed to ensure that the disposition of oil and gas production resources is accomplished in accordance with applicable requirements. Pipeline inspections are performed to ensure that pipelines are constructed, maintained, and operated in compliance with OCS regulations. Workover, completion, and abandonment inspections are conducted to ensure that those operations are performed safely and according to approved plans and regulations.

Inspections are conducted by petroleum engineering technicians located in district offices near the offshore facilities. The Minerals Management Service has four district offices and two sub-district offices in the Gulf of Mexico OCS Region, two district offices in the Pacific OCS Region, and one district office in the Alaska OCS Region. Inspections are highly technical in nature and consist of inspecting a number of small individual items that in the aggregate, measure the overall condition and compliance record of the particular operation being examined. The number of inspections that are completed must be viewed in an overall context as representing a compilation of numerous checks and examinations performed by Minerals Management Service inspection personnel. Some of the inspections conducted may take as long as 80 hours to complete. The difference in drilling and production equipment, and environmental conditions in the three regions must also be taken into account when considering individual inspections and overall statistics. For example, in Alaska, the equipment is usually state-of-the-art, designed for Arctic ice and severe weather conditions, as compared to other than deep water areas of the Gulf of Mexico and Pacific OCS Regions, where drilling equipment is usually conventional, designed for generally mild environmental conditions. The weather conditions frequently affect travel involved with inspection efforts. Due to the unique conditions imposed on lessee activities and logistical constraints, the Alaska OCS Region maintains a near continuous inspection presence at the drill site.

o Accident Investigation

Accident investigations are conducted to identify and eliminate specific safety or environmental problems, to analyze and assess the effectiveness of current equipment, procedures, and operations, to identify the need for new or modified regulations and to provide information needed to support all aspects of OCS activities. The OCS Lands Act requires that major fires, explosions, and oil spills be investigated and that a public report be prepared for each such incident. The Minerals Management Service is notified of every accident occurring on the OCS. Major accidents are investigated by a panel of experienced personnel and a public report is prepared. Improved accident investigation procedures are being implemented to increase dedicated staff available for accident investigations using both headquarters and regional personnel, increase data management, data review, and data analysis activities, and improve the comprehensiveness of accident investigation reports.

o Safety Award for Excellence

The Safety Award for Excellence Program was developed to recognize and commend those operating companies that expend extra effort and conduct their operations in a safe and pollution-free manner by adhering to all regulatory requirements, employ trained and motivated personnel, and take that extra step to enhance safety of operations and environmental protection. This award provides positive reenforcement of superior performance.

The Safety Award for Excellence is presented on both district and national levels. The District Safety Award for Excellence is based on exemplary performance on a single platform or rig, lease, or field or throughout an entire district. The National Safety Award for Excellence is given to a lessee or company selected from the winners of the district awards. The District Safety Awards for Excellence are presented semi-annually by the Regional Director of the Minerals Management Service, and they cover the periods January 1 through June 30 and July 1 through December 31 of each calendar year. The National Safety Award for Excellence is presented annually by the Secretary of the Interior or his representative.

- Selected Facilities Review

  A selected facilities review (SFR) is an intensive inspection effort aimed at facilities in a specific geographic area. Special inspection teams comprised of two to four inspectors from two or more OCS Regions inspect a designated number of various types of facilities in a short (usually three days) period of time using preselected PINC's. The inspections are unannounced and are intended as a tool to evaluate both the effectiveness of the Minerals Management Service inspection program and the level of lessee compliance with OCS regulation.

- Enforcement

  Provisions governing issuance of civil and criminal penalties significantly influence how Minerals Management Service requirements are enforced. Each house of Congress has passed provisions which would allow civil penalties to be assessed in certain cases without need for providing the lessee time for corrective action as currently required under the OCS Lands Act. Differences between the versions passed by each house are expected to be agreed upon and passage of final legislation is expected in FY 1990. The Mineral Management Service plans to adopt implementing regulations soon after final passage to be effective in FY 1991. The added flexibility in assessing civil penalties is expected to significantly aid in dealing with lessees who do not operate in compliance with applicable plans, permits, and regulations.

Recent activities and accomplishments for this subelement include:

- The Minerals Management Service performed 11,048 inspections of drilling, production, meter, pipeline, workover, and abandonment operations during FY 1989.

- In 1989, the Minerals Management Service, through the Platform Verification Program, reviewed the design and fabrication of the first Tension Leg Platform on the OCS and approved its installation in 1,760 feet of water.

- In the Arctic, structural inspections of a spray-ice island and other unique structures have been conducted to evaluate the construction and technology for exploratory drilling structures. Annual inspections have also been made of the abandoned gravel islands to assess damage to the islands after breakup and to note the presence of oil, trash, or other debris which may have been uncovered.

- Beginning in FY 1990, the Gulf of Mexico Region began inspecting up to 50 OCS facilities per year for compliance with the National Pollutant Discharge Elimination System permit provisions for the Environmental Protection Agency (EPA). A Minerals Management

Service inspection checklist, agreed to by EPA, is being used to conduct the facility inspections.

- Pilot facility inspections were conducted in 1988 by a special joint EPA-MMS team. In May 1989, EPA provided the necessary training for Minerals Management Service technicians to independently conduct these inspections.

- In April 1989, the Minerals Management Service organized a task force to evaluate oil spill response capabilities and regulations in each Outer Continental Shelf (OCS) Region. The task force reviewed each Region's procedures for assuring lessee compliance regarding requirements for: (1) oil spill contingency planning; (2) oil spill containment and collection equipment; (3) inspection and maintenance of equipment; (4) pollution preventing training and drills; and (5) oil spill reporting to the Minerals Management Service and other Federal, State, and local agencies.

  Recommendations were made to improve oil spill response in each of the OCS Regions. The task force found that the regulations and procedures were generally in good order, however, a few changes were recommended. As a result of the task force's evaluation, the Gulf of Mexico OCS Region, began conducting unannounced oil spill containment and cleanup drills. All four OCS Regions developed internal guidelines for conducting four different levels of spill drills and exercises from simulations to actual unannounced deployments. Each OCS Region also conducted a review of all operators' Oil Spill Contingency Plans to insure that each plan was appropriate for responding to the largest possible spill from the operators' facilities. National guidelines with regional supplements were also substantially developed for the review of Oil Spill Contingency Plans and the inspection of response equipment. Both the Gulf of Mexico and the Pacific OCS Regions initiated studies of the adequacy of collision avoidance in high vessel traffic areas within their region.

  The task force also reviewed the Minerals Management Service program for research into oil spill response and made several recommendations about accelerating or continuing projects. Much of this research is being funded under agreements that are presently being negotiated with the Canadian Government and the American Petroleum Institute.

- In November 1989, the Minerals Management Service conducted a seminar to discuss several offshore accidents, the probable causes of these accidents, techniques for predicting the probability of accidents, and the probable effectiveness of proposed safety and environmental improvements. As a result of the seminar, a Safety Review Task Group was formed to analyze current operating practices and regulations related to platform and pipeline safety.

After sufficient information is gathered, the task group is expected to propose new guidelines or regulations on the following items:

Platform operations and procedures when process equipment safety devices are out of service.

Location of pipeline safety valves on platforms and/or pipelines.

Emergency pressure reduction capability in pipelines.

Fire fighting systems on platforms including; equipment requirements; equipment placement; and control.

Repair procedures for pipelines, pipeline risers, and platforms.

Standard for fire survivability of platforms, living quarters, control rooms, etc.

Requirements for on board storage of flammable or toxic materials.

The task force is comprised of members of the headquarters staff and representatives from each OCS region. The first meeting is scheduled for mid-January 1990.

b. School Certification Activities

To ensure that workers in the OCS receive proper training necessary for safe operations, protection of the environment, and conservation of natural resources, the Minerals Management Service certifies drilling well control training schools and in FY 1990 is planning to begin certification of training schools in completion/workover well control and in production safety systems. In certifying the training schools, the Minerals Management Service first reviews the schools' proposed program and curriculum. Once the program is deemed to conform with the appropriate set of training standards, the Minerals Management Service grants approval of the school's documented program, subject to an onsite evaluation of a class in training. Final certification is given after the onsite evaluation if the course is conducted in accordance with the school's documented, approved program. All certified schools are subject to unannounced audits by the Minerals Management Service.

o Drilling Well Control Training

Certain industry personnel who work in drilling operations on the OCS are required by regulations to attend and successfully complete a certified course in drilling well-control operations.

The Minerals Management Service certifies drilling well-control training schools in accordance with Minerals Management Service regulations. The regulations are applicable to personnel classified as rotary helpers, derrickmen, drillers, toolpushers and operator's representatives.

- Completion/Workover Well Control Training

  Certain industry personnel who work in completion or workover operations on the OCS will be required to attend and successfully complete a certified course in completion/workover well control operations. The Minerals Management Service plans to begin certifying completion/workover well control training schools in FY 1990 in accordance with Minerals Management Service regulations which are currently being developed. Beginning in FY 1990, the regulations will be applicable to floorhands, completion/workover supervisors, and well servicing operators and supervisors during operations with the "christmas tree" (i.e., the wellhead control valves manifold) removed and during snubbing, coiled tubing, or wireline operations.

- Production Safety System Training

  In FY 1990, the Minerals Management Service plans to begin certifying training schools in production safety systems on the OCS. Lessee and contractor personnel will be required to attend and successfully complete a certified course on production safety systems in accordance with Minerals Management Service regulations that currently are being developed. The regulations will be applicable, beginning in FY 1990, to all OCS production personnel engaged in the installation, testing, maintenance, and operation of production safety systems and the platform supervisor or operators.

Recent activities and accomplishments include:

- During FY 1989, the Minerals Management Service performed onsite evaluations on 15 certified or recertified well control training schools. Unannounced audits were conducted on 19 schools. There are currently 161 certified well-control training schools (49 basic, 49 refresher, and 63 rotary helper/derrickmen).

- There has been no recent activity in completion/workover well-control training or Production Safety System Training. Both programs are in the "proposed rule" stage. It is anticipated that these programs will become effective in FY 1990 and the number of schools to be certified will increase during FY 1991.

c. Equipment Certification Activities

- Safety and Pollution Prevention Equipment Accreditation
  Certain safety and pollution prevention equipment (SPPE) used on the OCS must conform to the American National Standards Institute (ANSI) /American Society of Mechanical Engineers Standard (ASME)

"Quality Assurance and Certification of Safety and Pollution Prevention Equipment Used in Offshore Oil and ~~Gas~~ Operations," (ANSI/ASME SPPE-1). The purpose of this program is to provide assurances of safety and pollution prevention by ensuring that key safety and pollution prevention equipment is manufactured and maintained in accordance with accepted quality assurance standards and practices.

The Minerals Management Service currently participates with the ASME in the accreditation program. The Minerals Management Service monitors ASME surveys of manufacturers and serves on ASME advisory committees. It is anticipated that a similar program with the American Petroleum Institute will be initiated in FY 1990.

3. Operations Supervision ($4,455,000)

The objective of this subelement is to continue to develop technical expertise and information necessary to provide support for the Minerals Management Service Regulation of Operations responsibilities for OCS lease management. This support includes:

- Training of Minerals Management Service personnel in the performance of their duties and in the improvement of technical capabilities.
- Development and/or assembly of technology and equipment capabilities information for use during the review and approval of oil and gas exploration, development, and production plans.
- Development and/or assembly of technology and equipment capabilities information for use in conjunction with Government inspection and certification activities.
- Development, preparation, promulgation, and review of rules and regulations, safety alerts, Notices to Lessees, and internal operating procedures.
- Review, analysis, and improvement of the Minerals Management Service safety and pollution prevention inspections of oil and gas drilling and production operations and facilities.
- Other associated operations support.

Description of Subelement Products

a. Training

A variety of technical and safety training courses are attended by all employees. As a technically oriented Agency, training is an integral part of the Minerals Management Service operations. Training to enhance professional and managerial capabilities is considered vital to maintaining a work force capable of monitoring the expanding technology of the petroleum industry. Included is the spectrum of safety training to make the work environment reasonably safe for Minerals Management Service employees and to ensure that Minerals Management Service inspectors recognize unsafe equipment and unsafe operating procedures when they occur.

b. Technology and Equipment

The Minerals Management Service continuously assesses the offshore oil and gas industry's capabilities, procedures, and currently available equipment to conduct oil and gas operations in a safe and pollution-free manner. This is in compliance with OCS Lands Act, Section 21(b) which requires that the best available and safest technologies (BAST) be used in offshore minerals drilling and production operations. To assess BAST, the Minerals Management Service has established a technology information coordination network which makes use of Operations Technology Assessment Committees (OTAC) at each OCS Region. These groups review problems, new procedures and technologies, and evaluate potential alternatives for a variety of operational procedures.

Oil spill technology, equipment, and procedures continue to provide effective measures for minimizing environmental effects on OCS resources and uses from oil spills. The Minerals Management Service will be participating on national and regional hazardous material spill response teams. The Minerals Management Service also participates with other interested Federal Agencies and the Canadian Government in research activities including the evaluation of capabilities for oil spill containment and cleanup equipment and procedures. Testing is conducted both offshore and in a test tank for open-ocean and broken-ice conditions. Recent tests in the laboratory and in-situ burning of oil spills have contributed significantly to the approval of drilling operations during broken-ice periods in the Beaufort Sea. Other information is being used to quantify the effectiveness of manufactured equipment and operational procedures and to assist in the evaluation of oil spill contingency plans submitted to the Minerals Management Service for approval.

A formal contract research program (i.e., Technology Assessment and Research) is administered by the Minerals Management Service which addresses operational needs for permitting OCS drilling and production, safety and pollution inspections, enforcement actions, accident investigations, and well control requirements. Program planning is guided by lease sale plans and by inferences drawn from industry research. Examples of Minerals Management Service administered studies include:

- Diverting shallow gas blowouts away from drilling vessels.
- Environmental effects of removing old OCS platforms with explosives.
- Critical technical concerns relative to new types of OCS platforms for deep water areas (i.e., tension leg platforms and floating production systems).
- Cleanup of oil spills by in-situ burning.
- Validation of standardized procedures for testing the performance of oil containment booms without using spilled oil. Minerals Management Service technical material developed via this program is transferred to regulatory personnel through conferences, workshops, OTAC meeting, briefings, and written reports.

c. Rules and Regulations

In association with studies of technology and equipment, the adequacy of current regulations, and standards are continually reviewed relative to operating experience and new and emerging technology and information gained from analysis of accident reports. For example, recent experience has show a deficiency in documentation of tests of blowout preventer systems. This deficiency is the result of varying interpretations of operating regulations. An amendment is under development which is planned to be issued in FY 1990 and will result in documentation of this important test in a manner more usable by Minerals Management Service inspectors. Other rules under development include amendments to current regulations governing safety of operations in areas where hydrogen sulfide is present and a restructuring and updating of regulations governing sulphur operations in the OCS.

Internal directives and operating procedures establish consistency in Minerals Management Service operations. Notices to operators and lessees add specific regulatory explanation and guidance. Safety Alert Notices result from detailed analysis of particular accidents and provide recommendations to prevent recurrence of accidents and provide information necessary to facilitate safe operations and protection of the environment.

d. Inspection Analysis

The Offshore Inspection Program (OIP) has been developed to ensure uniform and consistent inspections nationwide and to identify potential problems in operational areas that require further investigation to ensure operational and personnel safety and protection of the environment. The OIP utilizes the Minerals Management Service National Potential Incident of Noncompliance (PINC) List and incorporates a computer system to monitor and analyze the results from all inspections. The OIP includes documented procedures at each organizational level and is subject to annual internal review for consistent implementation in all OCS Regions.

The first full internal review of the OIP was conducted during FY 1988. Several discrepancies with established procedures were noted and corrective actions have been initiated. These internal reviews will assist in consistent nationwide application of offshore inspections.

e. Associated Operation Support

These support activities include a "plethora" of requests from local, State, and other Federal agencies for information and meetings relative to regulations, terms, and conditions which affect OCS operations. Additionally, they involve providing support to Minerals Management Service inspection and enforcement related activities. These support activities include the generation of weekly, monthly, semi-annual, and annual reports of various kinds and types, review of requests for departure or variance from specific regulatory requirements, and review of particular problems related to OCS drilling and production operations.

Recent activities include:

- A symposium on oil spill response technology was held in December 1988 and was well attended both by representatives of industry and various Federal Agencies. The Minerals Management Service continues to initiate interagency cooperative research in oil spill response technology with U.S. Coast Guard, EPA, and the Navy. It also is continuing a long standing cooperative effort in oil spill response research with the Canadian Government and has recently developed a cooperative agreement with the American Petroleum Institute. The Minerals Management Service hopes in the very near future to reopen the Oil and Hazardous Materials Simulated Environmental Task Tank (OHMSETT) facility. Approximately 95 percent of all current performance data for oil spill response booms and skimming systems were generated at the OHMSETT facility. Reopening this facility will enable the Minerals Management Service with other Agencies to continue important research concerning the performance of oil spill containment booms and skimming systems.
- Preparation of responses to Freedom of Information Act requests.
- Maintenance of public and proprietary information files.

- o Implementation of an ongoing coordination program with military installations in locations where military activities may conflict with OCS oil and gas exploration and development activities.

- o Providing technical support and information for highly sensitive environmental and political negotiations relating to OCS activities.

- o During FY 1989, Minerals Management Service promulgated a number of significant rule makings. Those were the proposed and final rules for Leasing and Operations for Minerals other than Oil, Gas, and Sulphur; a proposed rule and proposed technical determinations of Best Available Control Technology (BACT) to address emission of air pollutants from OCS oil and gas operations off the coast of California; a proposed rule for revision of well-control training requirements to include well-completion and workover operations; and numerous others.

- o On August 29, 1989, the Minerals Management Service and the U.S. Coast Guard signed a new memorandum of understanding (MOU) to promote the safety of personnel, activities, and facilities on the OCS associated with the exploration, development, production, and processing of mineral resources. This new MOU better addresses current technology, the capabilities of each Agency, and the coordination of regulatory responsibilities and activities.

4. Program Management and Support ($5,077,000)

This subelement provides program guidance and direction, internal and external coordination of program activities, and program and technical support for the work of the Regulation of Operations Program. Policy guidance and program direction are provided by the Associate Directors for Offshore Minerals Management and Policy and Planning, the Deputy Associate Director for Offshore Operations, Regional Directors, the Office of Information and Publications, and the Office of Offshore Management Support. Included in the Office of Offshore Management Support is the Offshore Systems Center which reviews all of Offshore's ADP procurement and major systems design, standardizes data elements for all Offshore regions and headquarters offices, prepares activity reports and develops the ADP Strategic Plan. Cartographic, editorial, and other program support duties are provided by support staffs within each region and are funded within this subelement.

SELECTED WORKLOAD OUTPUTS

A summary of selected workload outputs in the Regulatory Program by subelement and other initiatives is presented in the following table:

	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate	Inc.(+) Dec.(-)
Inspections...........................	11,048	12,405	12,900	+ 495
Exploration/Development and Production Plans Processed......................	658	761	809	+ 48
Production Verifications...............	12,580	30,080	31,140	+1,060
Applications for Permit to Drill Processed...........................	803	860	882	+ 22
Platform Installation Applications Processed...........................	258	261	261	---
Pipeline Applications Processed........	310	271	302	+ 31
Production Rate Control (MER, MAR,)....	4,228	4,050	4,000	- 50
Quarterly and Semiannual Well Tests....	16,600	16,300	16,100	- 200
NGPA Category Determinations...........	214	240	125	- 115
Commingling Agreements................	296	250	250	---
Unitizations and Other Agreements Processed...........................	781	842	855	+ 13
Review Development Activity/ Lease Drainage.......................	353	246	230	- 16
Accident Investigations................	162	166	166	---
Applications for Workover, Recompletion, and Abandonments.....................	7,463	7,565	7,911	+ 346
Suspensions of Operation/Production....	575	525	484	- 41
Enhanced Recovery Operation Analyses...	9	9	6	- 3
Gas Flaring Approvals..................	360	352	412	+ 60
Verification of New Platforms..........	16	18	22	+ 4
Well Control School Certification Activities..........................	34	180	250	+ 70
Water Survival Training Actions........	63	69	66	- 3
Inspector Training Program Activities..	1	2	1	- 1
Selected Facilities Review.............	1	1	1	---

Increase from FY 1991 Base:

(Dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
$	28,194	29,333	+1,139
(FTE)	(402)	(402)	(---)

Helicopters (+$1,165,000)

An increase of $300,000 will be required to cover a 5.85 percent contract rate increase for helicopter usage in the Gulf of Mexico. This increase will enable the Minerals Management Service to maintain its current level of helicopter service.

An additional $465,000 will be used to cover the additional inspection activities required by additional facilities, increasing distances from shore, and the recently revised Offshore Operating Regulations. These additional activities include inspections of operations which ensure wellbore and pipeline integrity, such as workovers, completions, pipelines, and well abandonments, as well as, more unscheduled inspections. A major part of these activities occur in the Gulf of Mexico Region where a great majority of the offshore activity takes place. This Region's operations are also moving further from shore and into deeper waters. These funds are required to upgrade the single-engine helicopters presently under contract in three of the district offices to larger twin-engine helicopters. These helicopters will provide greater speed, larger capacity, and multi-engine safety to transport additional technicians to more facilities and to facilities further offshore.

In order to ensure the accuracy of oil and gas production volumes, an increase of $400,000 is required to complete all liquid royalty meter site security inspections and to witness the provings/calibrations of about 400 liquid and gas meters at least once a year. This requested amount will be used to contract an additional single-engine helicopter needed to transport the technicians to the additional inspection sites and to verify gas flaring.

Distribution of change by object class

The object class detail for the proposed change is as follows:

	Amount ($000)
Other Services..	+ 1,165
Total..	+ 1,165

Centralized Training (-$26,000)

A transfer of $26,000 is being made to the Administrative Operations subactivity for the general administration budget activity due to the centralization of certain training activities. This transfer is discussed in detail in the increase statement for the Administrative Operations subactivity.

Distribution of change by object class

The object class detail for the proposed change is as follows:

	Amount ($000)
Personnel Compensation	- 14
Personnel Benefits	- 2
Travel	- 2
Other Services	- 8
Total	- 26

Technology Assessment and Research (TA&R)

Objectives

- To provide technology support to enable the Minerals Management Service to better understand and address new or more hazardous OCS operating conditions as the industry moves into the hostile frontiers of the deep oceans and ice-infested Arctic and expand research on oil spill response technologies.
- To assure the use of the Best Available and Safest Technologies (OCSLAA Section 21(b)-BAST) through independent analyses of the OCS technologies, performance of research where deemed necessary, and continued engineering dialogue with the industry and the research community.

Program Description

Offshore operations conducted by oil and gas lessees and monitored by the Minerals Management Service are becoming increasingly involved in pioneering efforts in a number of complex technologies as exploration and production move into deeper and more hostile environments of the open oceans and the Arctic. The TA&R Program provides a comprehensive technological base for the Minerals Management Service in the supervision of leasehold operations. This support is stated within the OCS Lands Act Amendments of 1978 (OCSLAA), Section 21(b), which requires the use of the BAST on all offshore operations.

The TA&R Program operates through contracts with universities, private firms, and Government laboratories. It takes advantage of participatory or collaborative studies with industry, other agencies, and with other countries, in particular Canada and the United Kingdom, where similar operations, programs, and concerns exist.

Examples of activities and accomplishments:

- Theoretical analyses and large-scale tests at Louisiana State University (LSU) of shallow gas blowout diverter (piping) systems, used when blowout preventers are not installed, are being run to develop an improved understanding of design and operational parameters. This information is needed to improve Minerals Management Service regulations on the usage of these safety systems which have heretofore proven generally less than successful in operation.
- Theoretical and experimental investigations are being conducted at LSU into improved methods of controlling well kicks (potential blowouts) in deep water drilling operations where the long flow lines between the rig and the blowout preventer on the ocean floor make effective control operations more difficult. A signalling device has been developed which can digitally transmit bottom hole pressure readings, while drilling, to the rig and, through the use of a computer, actuate a surface choke to control these blowout pressures as quickly as possible.

- Experimental investigations of the physics of burning various crude oils on the ocean surface are being conducted at the National Institute of Standards and Technology in collaboration with the Canadian government. These studies have resulted in recent encouraging test findings in confined areas of broken ice.
- The Minerals Management Service is participating with industry on the evaluation of verification procedures for deep water platforms and of reverification procedures for aging platforms.
- In collaboration with industry, the Minerals Management Service is determining the mechanical properties of multiyear sea ice and the forces which the ice pack exerts against structures.
- The Minerals Management Service is participating with industry and the U.S. Coast Guard in evaluating the inspection approaches and monitoring techniques for the tendons (tensioned legs) of buoyant tension leg platforms. The first platform of this type in U.S. waters was installed in the Gulf of Mexico in 1989.
- The Minerals Management Service has conducted international workshops on subjects such as oil spill response technologies for Alaska waters, Nitrogen Oxide control technologies for OCS operations and the use of risk analysis in OCS operations. A second international workshop on platform operational risks is planned as a result of lessons learned from the United Kingdom's Piper Alpha disaster.
- Oil spill containment and cleanup technologies are being investigated in collaboration with Canadian government agencies.
- The Minerals Management Service is pursuing a program to seek industry, state, and public cooperation to develop and demonstrate offshore technologies which would reduce the emission of nitrogen oxides during offshore operations.
- The Minerals Management Service is greatly expanding its oil spill containment and cleanup technology research and development program. In 1989, the Minerals Management Service entered into a cooperative arrangement with the American Petroleum Institute in which the Minerals Management Service and the American Petroleum Institute would share the total project cost of approximately $6 million over a three-year period. That agreement will allow the Minerals Management Service to gain added leverage from its research and development budget and to benefit from the enhanced technical exchanges with industry.

SELECTED WORKLOAD OUTPUTS

Selected outputs for the Technology Assessment and Research Program are:

	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate	Inc.(+) Dec.(-)
Technological Investigations	25	25	30	+5
Technological Assessments	6	6	8	+2
Technology Seminars Conducted	2	3	5	+2
Technical Reports Published	2	2	3	+1

Increase from FY 1991 Base:

(Dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
$	1,634	2,095	+461
(FTE)	(---)	(---)	(---)

Safety and Pollution Prevention Research (+$461,000)

An increase of $461,000 is requested to supplement funding for regulatory assessment and research as the oil and gas industry moves into the deeper water and harsher environments by means of the development of advanced technologies. The proposed increase would allow for a more rigorous independent analysis of the effectiveness of blowout prevention technology, the structural integrity of deepwater platforms and pipelines, and the impact of Outer Continental Shelf operations on air quality.

The requested increase will fund additional effort in the following research topics:

Deep Ocean Blowout Prevention/Diverter Operations
Deep Ocean Structures and Pipelines
Engine Exhaust Emissions Reduction
Operational Risk Analysis

Distribution of change by object class:

The object class detail for the proposed change is as follows:

	Amount ($000)
Other Services..	+461
Total..	+461

Oil and Gas Information

Objectives

- To assist State and local officials and the general public in planning for potential nearshore and onshore impacts of OCS mineral exploration, development, and production activities and to assist them in working with the Minerals Management Service by providing summaries of scientific, technical and policy data.
- To compile, organize, print, and disseminate OCS laws and regulations on a current and continuing basis to facilitate efforts by other Federal Agencies, State and local governments, and the public to manage OCS activities.

Program Description

This program has the prime responsibility for providing State and local officials with summary information to aid them in planning for and effectively managing potential coastal and onshore impacts resulting from OCS mineral exploration, development, and production as mandated by the OCS Lands Act. The siting, construction, and operation of onshore support facilities are regulated by a number of State and local governments.

Major Subelements and Subelement Products

1. OCS Oil and Gas Information Program

    a. Provide continuing coordination with Minerals Management Service headquarters and regional personnel, other Federal Agencies, State agencies, industry representatives, and local government officials regarding data needs related to Offshore activities.

    b. Develop Regional Update Reports, Regional Map Plates, OCS Compendium, OCS Directory, and OCS Leasing/Operations Procedures Document from analysis and synthesis of available data.

    c. Develop and maintain current automated mailing list of State and local officials and other interested parties, and provide Regional Summary Updates, reports and other data upon request.

2. OCS Regulations (Section 21(f) OCSLAA).

    Compile, organize, format, print, and disseminate the compilation of OCS regulations in accordance with requirements of the OCS Lands Act.

3. OCS Laws

    Compile, organize, format, print, and disseminate the compilation of OCS laws in accordance with requirements of the OCS Lands Act.

4. Program Management and Support

This subelement provides overall program guidance and direction, internal and external coordination of program activities, and information and technical support. The function of the Office of Offshore Information and Publications includes:

a. Overall management, development, and coordination of offshore technical and scientific publications, graphic design and information policies, products, and activities related to the OCS program.

b. Development and implementation of policies, procedures, and products that support these activities to meet the objectives of the Minerals Management Service in providing State and local officials, industry, and the public with timely, useful scientific, technical, and policy information for working cooperatively with the Minerals Management Service and planning for OCS mineral activities and related effects.

Policy guidance and program direction are provided by the Associate Director for Offshore Minerals Management, the Deputy Associate Directors, and the Office of Offshore Management Support.

Recent Activities and Accomplishments Include:

- Printing of the Gulf of Mexico Update Report on Offshore and Onshore Oil and Gas Activities as mandated by Section 26 of the OCS Lands Act, as amended.
- Preparation of the Pacific Update Report on Offshore and Onshore Oil and Gas Activities, as mandated by Section 26 of the OCS Lands Act, as amended.
- Preparation of the Alaska Update Report on Offshore and Onshore Oil and Gas Activities as mandated by Section 26 of the OCS Lands Act, as amended.
- Dissemination of the OCS National Compendium.
- Printing of the Pacific and Alaska OCS Map Plate Series.

SELECTED WORKLOAD OUTPUTS

Selected Oil and Gas Information Program outputs are:

	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate	Inc.(+) Dec.(-)
Annual Regional Update Reports......	2	4	4	---
OCS Regulations Document............	1	0	0	---
OCS Regulations Revision............	0	0	1	+1
OCS Laws Update.....................	0	1	0	-1
OCS National Directory..............	1	1	1	---
OCS Leasing/Operations Procedures...	0	1	0	-1
Annual Update of Regional Map Plate Series.................	2	2	3	+1
OCS National Compendium.............	1	0	1	+1
OCS 5-year Program Map..............	1	0	1	+1

Activity Summary

Activity: Royalty Management

(In thousands of dollars)

Subactivity	FY 1989 Actual	FY 1990 Approp Enacted	FY 1990 Adjusted Approp	FY 1991 Base	FY 1991 Estimate	Inc.(+) Dec.(-), from Base
Mineral Revenue Collections	16,924	18,243	17,985	18,654	19,963	+1,309
Mineral Revenue Compliance	14,986	18,636	18,374	18,596	21,789	+3,193
Systems Development and Operation	19,202	18,092	17,833	17,920	19,767	+1,847
Indian Refunds	---	64	63	64	---	-64
Interest on Late Payments	215	---	---	---	---	---
Total Requirements	51,327	55,035[1]	54,255	55,234	61,519	+6,285

Authorizations

25 U.S.C. 397, *et seq*.	The Indian Mineral Leasing Act of 1891, as amended, authorizes mineral leasing on lands bought and paid for by Indians.
25 U.S.C. 396, *et seq*.	The Indian Mineral Leasing Act of 1909 authorizes oil and gas leases on Indian allotted lands.
25 U.S.C. 396-396(g), *et seq*.	The Indian Mineral Leasing Act of 1938 authorizes oil and gas leases on Indian Tribal lands and provides uniformity with respect to leasing of Tribal lands for mining purposes.
30 U.S.C. 181, *et seq*.	The Mineral Leasing Act (MLA) provides for classification and leasing of coal, oil, oil shale, natural gas, phosphate, potassium, sulphur, and sodium and the payment of bonuses rents, and royalties on such leases.

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[1] See Footnote on page MMS-22.

43 U.S.C. 1331, *et seq.*	**The Outer Continental Shelf Lands Act of 1953 as amended, (OCSLAA) extends the jurisdiction of the United States to the Outer Continental Shelf; provides for granting of leases to develop offshore energy and minerals; and provides for bonuses, rents, and royalties to be paid in connection with such leases; and calls for sharing certain revenues with coastal states.**
30 U.S.C. 1001, *et seq.*	The Geothermal Steam Act of 1970 authorizes the Secretary to issue leases for the development of geothermal energy and provides for receipt sharing with the States.
30 U.S.C. 181, *et seq.*	The Combined Hydrocarbon Leasing Act of 1981 provides for combined hydrocarbon leases and receipt sharing with the States for such leases within their boundaries.
25 U.S.C. 2101, *et seq.*	The Indian Mineral Development Act of 1982 provides that any Indian Tribe may enter into lease agreements for mineral resources within their boundaries with the approval of the Secretary. Allotted land owners may join Tribal mineral agreements.
30 U.S.C. 1701, *et seq.*	The Federal Oil and Gas Royalty Management Act of 1982 (FOGRMA) provides for comprehensive fiscal and production accounting and auditing systems to provide the capability to accurately determine oil and gas royalties, interest, fines, penalties, fees, deposits, and other payments owed and to collect for such amounts in a timely manner.

The Royalty Management Program (RMP) is responsible for the determination, collection, accounting for, and distribution of royalty and other revenue from Federal onshore and Outer Continental Shelf Lands mineral leases and producing Indian leases. The program is a major source of revenue to the Federal Government, to Indian Tribes and allottees, and to those States which share in revenues from Federal onshore and certain offshore mineral leases.

All royalty accounting operations are located in the Lakewood Accounting Center to provide efficiency and economies of scale in the financial and data collection process and to assure consistent guidance to lessees and operators. However, functions are clearly separated to provide essential counterchecks for proper internal control (see Mineral Revenue Collections subactivity). Auditors are located geographically close to major workload areas to provide a more efficient audit capability (see Mineral Revenue Compliance subactivity). A systems function is responsible for the development, operation, and maintenance of the complex automated systems (see Systems Development and

Operation subactivity).

Recent Program Initiatives

Recent program initiatives are serving to enhance the accomplishment of program responsibilities. Among the most important initiatives are:

- The MMS audit strategy has been revised to provide improved audit coverage of Federal and Indian leases. The MMS is directing the majority of its audit resources toward more than 230 major payor company audits. The remaining payors are subject to audit through a sample selection process; through audit referrals from the Bureau of Indian Affairs (BIA) and the Bureau of Land Management (BLM); and through exception referrals from the Auditing and Financial System (AFS), the Production Accounting and Auditing System (PAAS), and the Bonus and Rental Accounting Support System (BRASS).

- The MMS started a major project in FY 1989 to accelerate the completion of prior-year audits and place the ongoing cycle on a more contemporaneous schedule. Prior to this initiative, companies were often required to retain records for 7-12 years to accomplish an audit of 6 years of data. This project will reduce these retention periods and accelerate collections of any additional royalties due. The MMS believes that this new steady state audit cycle is consistent with the intent of Congress, although MMS believes Congress envisioned a period of several years would elapse before this equilibrium condition would be achieved, when it established a 6-year record retention requirement in FOGRMA.

- As part of the audit strategy, MMS, States, and Indian Tribes jointly schedule comprehensive company audits at offices of the major payors who submit over 90 percent of Federal and Indian revenues.

- During FY 1988, MMS assumed the responsibility of accounting for Indian nonstandard leases and agreements. Because these leases and agreements contain unique provisions not readily adaptable to AFS, MMS developed off-line microcomputer applications to process these documents. The implementation of the new off-line system was completed in FY 1989.

- During FY 1991, MMS plans to improve the process for monitoring revenue on Indian leases. The recoupment of royalties by a company is a common and permitted practice whereby a company offsets a current royalty payment due against a previous excess royalty payment. The MMS is proposing an increase that will provide staffing necessary to monitor overrecoupment activity and to assure that Indian allottees can expect relatively consistent monthly royalty payments.

- On January 15, 1988, MMS published final regulations for determining the value for royalty purposes of oil and natural gas produced from Federal and Indian leases. These regulations became effective March 1, 1988. Final rulemaking for coal product valuation was published in the Federal Register on January 13, 1989, and became effective on March 1, 1989. As discussed on page MMS - 147, the Secretary is proposing to amend the rule. Proposed rulemaking for valuing geothermal resources was published in the Federal Register on January 5, 1989.

- The initiative to centralize onshore oil and gas production reporting within MMS was successfully completed in October 1989 when the remaining onshore leases were converted to the automated production reporting system. The MMS is now able to systematically and comprehensively compare sales reported by operators on production reports to sales reported by payors on royalty reports.

- The Office of External Affairs (OEA) projected efforts in FY 1991 include 20 visits with the BIA Area and Agency Offices, 12 visits with Allottee groups and 8 visits with Indian Tribes. The OEA received requests for 166 desk reviews in FY 1989, completed 112 desk reviews in FY 1989, and has 184 outstanding reviews to complete. The OEA is projected to receive requests for 250 desk reviews in FY 1991.

- The MMS will continue to retain the services of a major accounting firm during FY's 1990 and 1991 for accounting and systems advice. The contract has been beneficial to MMS, resulting in significant improvements and giving assurances of a properly operating accounting system. During FY 1989, the firm assisted MMS in documenting the accounting procedures necessary to process Indian nonstandard leases; completed review of MMS procedures for regression testing of AFS software; completed review of the MMS audit strategy; and initiated reviews of write-off procedures and development of criteria and procedures for RMP use of letters of credit and other bonding techniques.

- The MMS is continuing its initiative to enhance the AFS in response to recommendations from systems users, the Royalty Management Advisory Committee (RMAC), and other interested parties. Benefits derived so far from these enhancements include: simplified reporting, as a result of the elimination of zero sales reporting and an extended reporting period for adjustments; increased revenues, as a result of onshore AFS/PAAS comparisons; and improved information to RMP clientele through enhancements to Explanation of Payment Reports, dissemination of unedited royalty data, and publication of RMP policy changes. Long-term enhancements to further simplify industry reporting, accelerate the processing and disbursement of receipts, and improve relations with and services to clientele were incorporated in the RMP's Business System Improvement Plan. The implementation phase of this plan is the Business System Planning Implementation (BSPI). The MMS is continuing implementation of this plan during FY's 1990 through 1991.

- In response to the issues raised by the Special Committee on Investigations of the Senate Select Committee on Indian Affairs, MMS established an Initiative for Indian Tribes and Allottees (IITA) Task Force to evaluate the Committee's concerns and to develop an improvements plan. The IITA task force developed several proposed improvement initiatives responsive to the findings of the Senate Select Committee. The proposed improvements were reviewed by the RMAC. Final

RMAC recommendations were forwarded to the Secretary of the Interior on September 13, 1989. The MMS is developing an Action Plan for Improved Indian Royalty Management that will be incorporated into a Department Action Plan for improved services to Indians. Increases totaling $1.656 million are requested to intensify audit, outreach, product valuation, and collection oversight on Indian leases.

- In late 1988 and early 1989, RMP requested assistance from its constituents in a review and reassessment of RMP's statutory and regulatory requirements, as well as its mission, goals, and overall performance. The RMP requested comments from States, Indian Tribes, industry, and other Federal entities on its Draft Strategic Plan for Operations and Systems. During July and August 1989, the RMAC convened a working panel to review the Draft Strategic Plan. The RMAC rejected a diverse range of options for change. The RMP is currently developing a final Strategic Plan based on the input from RMAC and other constituents.

- The RMP is continuing its active participation in the President's quality and productivity improvement program. A variety of RMP initiatives including IITA, BSPI, and onshore production reporting are incorporated into a Strategic Plan for Royalty Management Excellence in the 1990's. The plan is geared toward improving the quality of RMP services and fulfilling its stewardship mandate, while fostering a customer orientation throughout the gamut of RMP functions and activities.

Justification of Program and Performance

Activity: **Royalty Management**
Subactivity: **Mineral Revenue Collections**

(Dollar amounts in thousands)

Subactivity		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc.(+) Dec.(-) from Base
Mineral Revenue Collections	$ (FTE)	18,243 (292)	17,985 (292)	18,654 (292)	19,963 (294)	+1,309 (+2)
Total Requirements	$ (FTE)	18,243[1] (292)	17,985 (292)	18,654 (292)	19,963 (294)	+1,309 (+2)

Impact of Public Law 99-177

(In thousands of dollars)

	FY 1990 Enacted To Date	P.L. 99-177 B. A. Cancellation	FY 1990 Adjusted Appropriation
Mineral Revenue Collections	18,243[1]	-258	17,985

In FY 1990, the Mineral Revenue Collections subactivity must absorb a Gramm-Rudman-Hollings sequestration of $258,000. To absorb the cost of sequestration in FY 1990, the RMP will delay work recommended by GAO and the Department Inspector General on a special project designed to detect certain rent and minimum royalty underpayments through a lease review process. In addition, MMS will delay the purchase of laser optic equipment for enhanced fiscal document processing. As a result, the use of microfiche technology will continue, causing prolonged use of inefficient manual document processing procedures, increased backlogs of documents awaiting microfilm processing, and delayed document retrieval and research efforts. The MMS expects to complete these projects in FY 1991 following restoration of the sequestered funding.

Objective

- o To efficiently carry out the provisions of legislation providing for collection and distribution of mineral revenues. In particular, FOGRMA requires the timely collection of revenues due, the detection of incorrect payments, and the enforcement of the penalty and assessment provisions for noncomplying royalty payors and reporters.

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[1] See Footnote on page MMS-22.

Program Description

The Mineral Revenue Collections subactivity provides funds to collect, process, account for, and distribute bonuses, rents, royalties, penalties, interest, associated fees, and other payments received by MMS. In addition, this activity supports the operation of the Royalty-In-Kind (RIK) Program which provides a long-term secure supply of crude oil at a reasonable price to small, independent refiners. The MMS charges a fee to recover the administrative costs of the RIK Program and deposits this revenue in the General Fund of the Treasury.

The MMS developed three accounting systems to carry out its objective of accurate and timely collection and distribution of mineral revenues. They are the Auditing and Financial System (AFS), the Production Accounting and Auditing System (PAAS), and the Bonus and Rental Accounting Support System (BRASS). The operation and maintenance of these systems is supported under the Systems Development and Operation subactivity, while the primary users of the information and data provided by the systems are the staff funded by the Mineral Revenue Collections subactivity. These systems and their functions are detailed below. In addition, MMS developed an information access system, the State and Tribal Support System (STATSS), to provide States and Indian Tribes with remote access to MMS data and the Interagency Data Verification System to verify the consistency of lease data among Department of the Interior Bureaus.

In FY 1991, it is estimated that RMP will collect and account for approximately $4.0 billion in mineral leasing revenues through AFS and BRASS. To further verify payments and guard against under reporting of sales volumes, the RMP operates a centralized production reporting system, PAAS, which tracks production reports from Federal and Indian leases.

The RMP compares production data to royalty data to verify that proper royalties have been reported and paid. The RMP was created to minimize under collections and will continue to work toward improving collection and reporting mechanisms in FY 1990.

The MMS automated systems have stabilized and are performing the major functions for which they were designed. The systems have the following status:

- Payor and system error rates have dropped to systems integrity levels; sustaining these levels has required a continuing resource-intensive effort on the part of RMP staff;
- Over 96 percent of all dollars collected each month is disbursed within the following month; and
- The penalty and assessment procedures contained in MMS regulations have been helpful in reducing error rates and improving payor and reporter compliance.

Auditing and Financial System (AFS)

The AFS is designed to fulfill eight principal objectives: (1) process royalties reported by the payors promptly and efficiently; (2) distribute mineral revenues to State, Indian, and General Treasury accounts on a monthly basis in accordance with FOGRMA; (3) calculate, distribute, and disburse interest and penalty payments to States and Indians in those instances where it is required by FOGRMA; (4) identify instances of under reporting and nonreporting at a level of detail which enables MMS to effectively and quickly communicate with payors and promptly collect revenues due; (5) account for all mineral revenues due, collected, and disbursed in a system of accounts which enhances MMS's ability to control and report on RMP; (6) provide royalty accounting and statistical information to those parties, including States and Indian Tribes, which have a need for such information; (7) build and maintain a data base which can effectively be matched with production data in the production accounting system; and (8) create an automated billing process for all receivables generated by the system.

Data in the system is available to States, Indian Tribes, and Department of the Interior users, such as the BIA, through STATSS. Enhancements are occasionally made to STATSS to maintain efficient report production and to keep STATSS applications responsive to user needs.

Exception Processing: The purposes of the exception processing program are to identify payor noncompliance in royalty reporting and paying and to point out recurring problems in order to improve reporting and paying accuracy. Billable exceptions are generated by comparing what a payor reports and pays to what the system expects the payor to report and pay. Although the AFS generates these exceptions each month, a manual effort is necessary to assure that a true discrepancy exists and that the royalty payor is in fact responsible for the problem.

Since FY 1986, MMS has augmented the exception processing effort with contractor employees in order to handle the large workloads. Through the contractual effort, MMS issues bills on Federal and Indian leases for late reporting, late payments, and insufficient estimated payments on Indian leases. In FY 1991 it is anticipated that the contractor workload will increase due to the implementation of the Federal Insufficient Estimate Module and other Business Systems Planning Implementation (BSPI) and Initiative for Indian Tribes and Allottees (IITA) related initiatives in exception processing. The workload, in the areas of pre-bill research and billing, will increase by approximately 2,500 actions to a total of 10,500. Annual contractor and in-house costs to carry out the exception processing program are projected to total $2.9 million in FY 1991.

The RMP has utilized IBM's Business Systems Planning (BSP) methodology to evaluate the effectiveness of current systems, to identify both short-term and long-term functional improvements, and to develop a long-term strategic plan for future systems design and implementation within the Systems Development and Operation subactivity. Part of RMP's in-house cost within the Mineral Revenue Collections subactivity is for the testing of new and modified software. This cost will increase in FY 1991 due to a higher level of testing required on the BSP system improvements to permit full acceptance of the new and enhanced software.

Although exception processing has the primary goal of increasing compliance with the law and implementing regulations, increased revenues are a secondary benefit of this activity. From February 1985 through September 1989, MMS has increased royalty collections by $53.3 million as a result of exception processing. During FY 1989 alone, MMS collected additional gross revenues of $17.3 million. This FY 1989 collection amount is approximately $5 million higher than collections have been averaging due to a retroactive billing project. In FY's 1990 and 1991, additional gross receipts are estimated to average $14 million each year. The MMS will also be exploring further enhancements to exception processing routines which could favorably impact billings and collections.

The revenue generated by exception processing has been shared, as appropriate, with States and Indian Tribes and allottees.

Error Correction: The RMP made continued progress during FY 1989 towards reducing payor error rates in the AFS and improving payor compliance. This progress is attributed to:

- Payor training efforts which included the presentation of eighteen 2-day training sessions for 212 royalty paying companies in FY 1989.
- Substantial improvements to the MMS Payor Handbook (the official guide to royalty payors on how to report to the AFS).
- A vigorous program of assessments and penalties for incorrect reporting and failure to submit payor information forms. These penalties are levied under the provisions of the OCSLAA, the MLA, the FOGRMA, and various implementing regulations.

The improvement in payor compliance with paying and reporting requirements can be seen in the historical drop in the percent of total fatal lines (those data lines with errors which make it impossible to accurately disburse funds until corrected) as reflected in Figure 4 shown below.

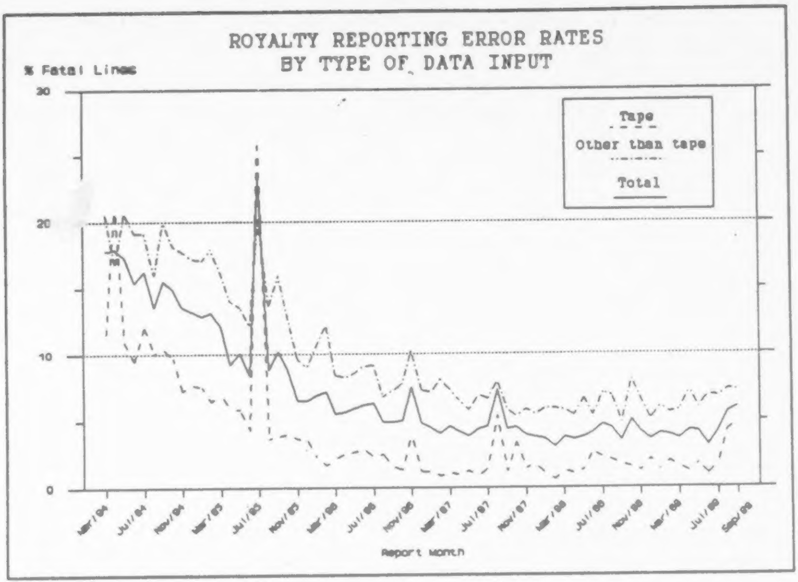

Figure 4

The number of error corrections completed will increase by 60,000 in FY 1990 because of the conversion of the last major payor to the AFS. This conversion will add approximately 500 additional royalty payors and as many as 50,000 to 70,000 more accounting lines. The RMP anticipates a relatively high initial error rate with these new payors but expects this problem to be mitigated by certain on-line computer enhancements which will make error correction more efficient. A further increase of about 21,000 error correction actions will occur in FY 1991 due primarily to the tightening of tolerances in edit criteria. Although the workloads will increase, the changes will improve the accuracy and integrity of the data base and the accounting operations.

As displayed in Figure 4, the percentage of rejected fatal lines is depicted by type of data input: tape; other than tape; and total lines. The trend over time has been a steady decline in the percent of total fatal lines, from 17.3 percent in FY 1984 to 4.2 percent in FY 1989.

Electronic Funds Transfer: In an effort to run an efficient accounting operation and realize savings to the Federal Government, MMS initiated the use of Electronic Funds Transfer (EFT) to expedite royalty payments to the Government. Regulations initially in place required all payors with transactions in excess of $50,000 to use EFT. Then, in keeping with Treasury Department goals, MMS reduced the EFT threshold to $10,000 in FY 1987. In addition, MMS extended the use of EFT to solid mineral and geothermal leases and certain deferred bonus payments. The MMS will continue converting payors to EFT as their payments meet the appropriate criteria. For FY 1991, RMP expects the number of EFT to increase by 800 with a decrease in the number of checks received. The MMS is also working on a pilot program with a major billee to convert all of their BRASS lease rental payments to EFT via the Automated Clearing House. The conversion of approximately 100 of these leases is planned to be completed in FY 1990 with the pilot program continuing through FY 1990. An increase of 1,400 EFT's is expected on BRASS rental payments with a corresponding decrease in checks received during FY 1991.

Payor Information Forms Processed: Because the last major payor will be converted to AFS in FY 1990, the number of Payor Information Forms processed will decrease in FY 1991 by 5,000. However, the overall workload will increase substantially. This is because new product value and allowance regulations, the BSPI, and the repeal of the Windfall Profit Tax have made it necessary to change the definition of a "selling arrangement." As a result, it will be necessary to review all 90,000 "selling arrangements" that currently reside in the AFS data base. The RMP anticipates that contractor support staff will need to be substantially expanded to handle this new work.

Accounting for Indian Nonstandard Leases: In March 1988, MMS assumed the responsibility of accounting for and auditing nonstandard leases and agreements for Tribes and allottees. This is consistent with the recommendations of the RMAC and the desires expressed by several Indian Tribes. Nonstandard leases are those that contain unusual provisions such as nonstandard royalty rates, variable or escalating arrangements, joint venture provisions, and RIK provisions. Many of these leases and agreements cannot be processed by the standard AFS formats and are being processed on an off-line microcomputer.

SELECTED WORKLOAD OUTPUTS

A summary of selected workload outputs relative to AFS is presented in the following table:

	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate	Inc.(+) Dec.(-)
AFS Warnings/Bills Issued	8,200	8,000	10,500	+2,500
AFS Reporting Error Corrections Completed	100,200	160,000	181,000	+21,000
Checks Deposited	35,200	35,000	34,600	-400
Payor Information Forms Processed (New and Revised)	37,200	42,000	37,000	-5,000
EFT Messages Received	6,400	6,500	7,300	+800
Percentage of Collections by EFT	88	93	95	+2

Production Accounting

Complementing the mineral revenue accounting operation, RMP conducts a sophisticated, centralized production accounting activity. With the conversion of onshore production reporting to the MMS systems in 1988 and 1989, MMS completed the final phase of the centralization and automation of all Federal and Indian production accounting. For the first time in its history, the Department has a consolidated, consistent, timely repository of production information on all Federal and Indian mineral leases nationwide.

The objectives of the production accounting operation and the automated systems which support it are to: (1) support lease management functions by supplying accurate and timely production data to MMS Offshore Regional Offices, BLM, and BIA; (2) identify potential royalty underpayments by comparing sales volumes reported by operators to sales volumes reported by royalty payors; (3) account for and reconcile production data and disposition volumes for leases and agreements; (4) trace mineral production from point of origin to point of sale for all offshore and onshore mineral leases; (5) identify inconsistencies in production data to target leases and operators for audit and on-site inspection; and (6) provide production data on a lease-by-lease basis to States and Indian Tribes.

The MMS receives, processes, edits, and corrects production reports from lease operators and provides monthly production data to agencies, States, and Tribes. Comparisons of AFS/PAAS data are made on a monthly basis and exceptions representing differences between sales and production data are examined and reconciled. The MMS then contacts payors and operators to assure reports are corrected and any additional royalties are paid. This effort has continually proven to be highly cost-effective. From June 1985 through October 1989, this effort has resulted in additional royalty collections of $39.2 million. With the completion of the onshore conversion and the system enhancements discussed below, MMS expects to increase annual collections from about $12 million in FY 1989 to about $21 million in FY 1991, although actual collections cannot be predicted with great accuracy.

The onshore conversion, which was completed in October 1989, culminated more than 2 years of joint effort by BLM, MMS, and the oil and gas industry. Standardized reporting required the development of an automated production reporting system capable of processing and distributing over 200,000 lines of data monthly from 18,000 onshore production reports submitted by over 2,000 operators. As a result of extensive advance coordination and communication among the parties involved, the conversion was extremely effective. Although most of the operators were reporting to MMS for the first time, the initial reporting error rate was less than 9 percent, about half the expected rate.

Comparison of offshore production volumes and run-ticket volumes by the Offshore Minerals Management-Liquid Verification System will begin in FY 1990 and, as a result, require work effort in production verification support. The MMS will also implement assessments for late and erroneous production reporting for onshore properties in FY 1990, generating a significant increase in the workload to process assessments and appeals in FY's 1990 and 1991.

The MMS has enhanced its exception processing software to increase efficiency and productivity. The upgraded software increases efficiency by eliminating several manual research, follow-up, and tracking activities, and minimizes generation of erroneous exceptions. This efficiency has been factored into resource requirements. Additionally, the enhanced software summarizes lease exceptions at a higher level for efficient exception resolution. As a result, what the system would previously have recognized as 40,000 exceptions is now counted as 31,230 exceptions. It should be noted that while the count is different, the workload remains the same.

Contractors are currently providing operation and maintenance support for the automated system. Additionally, contract personnel perform document error correction and front-end AFS/PAAS exception processing. Contract effort expanded as a direct result of the increased workload associated with the October 1989 conversion.

Presently, PAAS operates in two computer environments: (1) offshore and some onshore production data submitted on Form MMS-4054 is processed on a VAX minicomputer; and (2) onshore production data submitted on Form MMS-3160 is processed on the IBM mainframe computer. The MMS will begin designing software in FY 1990 to convert production data from the VAX computer to the IBM mainframe. Additionally, an automated access system similar to STATSS will be designed to provide on-line production data to States and Tribes in FY 1991.

SELECTED WORKLOAD OUTPUTS

A summary of selected workload outputs relative to PAAS is presented in the following table:

	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate	Inc.(+) Dec.(-)
Technical Assistance Projects				
--Operators	1,325	100	100	---
--Other DOI Offices	35	50		---
Error Corrections				
--Reference Document Errors	15,080	21,000	21,000	---
--Operating Document Errors	99,770	145,000	135,000	-10,000
Exception Resolution				
--AFS/PAAS Comparison Exceptions	37,000	31,230	34,200	+2,970
--Other PAAS Exceptions	45,960	135,000	135,000	---
Assessments and Appeals	75	1,120	1,120	---
Production Verification Support				
Liquid Verification System	---	4,600	4,600	---
Bureau of Land Management	280	600	600	---

Bonus and Rental Accounting Support System (BRASS)

In FY 1984, MMS accepted responsibility for the collection of bonuses and rents from Federal onshore nonproducing leases. As of September 30, 1989, there were 60,601 active leases in rental status. For this function to be compatible with the AFS and to meet the requirements of the FOGRMA, an automated BRASS was designed and installed. Operation of this system began in April 1984.

The principal functions of BRASS are: (1) collect and account for lease bonuses and create new lease records as a result of bonuses paid; (2) generate courtesy notices for annual rentals and deferred bonuses; (3) collect, deposit, and account for annual rental payments; (4) provide financial update and general ledger data to the AFS; (5) provide rental accounting data to BLM State Offices which manage the leases; (6) support monthly distribution and disbursement requirements as specified in FOGRMA; and (7) provide lease data to AFS when leases go into production.

On January 19, 1989, the Secretary stated that rental fees for federal onshore oil and gas leases could not be increased for a period of three years. As a result, RMP performed lease financial adjustments and processed refunds on many of the 36,000 affected leases. Therefore, the number of BRASS refunds processed and the number of industry inquiries for FY 1990 are expected to increase compared to FY 1989 levels, while the number of lease financial adjustments will decline.

SELECTED WORKLOAD OUTPUTS

A summary of selected workload outputs relative to BRASS is presented in the following table:

	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate	Inc.(+) Dec.(-)
Unidentified Checks	6,900	8,000	8,000	---
Refunds Processed	2,400	3,000	3,000	---
Lease Financial Adjustments	14,400	12,000	12,000	---
Industry Inquiries	11,400	12,000	12,000	---
Data Base Maintenance Actions	26,800	27,000	27,000	---
Checks Deposited	47,900	48,400	47,000	-1,400
EFT Messages Received	19	100	1,500	+1,400

Increase from 1991 Base

(Dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
$	18,654	19,963	+1,309
(FTE)	(292)	(294)	(+2)

Initiative for Indian Tribes and Allottees (IITA) (+$77,000, +2 FTE)

An increase of $77,000 and 2 FTE is proposed to review and resolve improper overrecoupments and to expedite monthly disbursements of royalties to the BIA for Indian allottees. This increase is requested as a result of recommendations made by the Senate Select Committee on Indian Affairs and of problems cited by the Indian community. Improved levels of service are consistent with the Secretary's Indian trust responsibilities. Related increases under IITA are being requested in the Mineral Revenue Compliance and Systems Development and Operation subactivities.

The recoupment of royalties by a company is a common and permitted practice whereby a company offsets a current royalty payment due against a previous excess royalty payment. Unfortunately, recoupment can produce significant shifts in the level of payments made monthly to allottees. To reduce this fluctuation in payments, companies are permitted to recoup in any one month no more than 50 percent of the current royalties owed. However, overrecoupmments do occur and MMS has been able to provide only limited oversight of recoupment activity. This increase will provide the staffing necessary to monitor overrecoupment activity and assure that Indian allottees can expect relatively consistent monthly royalty payments.

Similarly, MMS can better assure timely royalty payments to allottees by expediting disbursements to BIA. While MMS has achieved a high degree of success in performing this function, further improvements are possible. Currently, MMS disburses all funds to BIA within 24 hours of receipt so they may be invested. The MMS furnishes accounting details to BIA twice-monthly so it can provide the funds to the individual allottees. The MMS provides this information within one month in 97 percent of the cases. This initiative includes funding to provide the necessary accounting details to BIA to further expedite the disbursement of royalties to allottees.

Billing for Allowance Exception Processing (+$66,000)

An increase of $66,000 is requested to provide contractor support for the billing process associated with the implementation of allowance exception processing.

Companies are permitted to deduct oil transportation and gas transportation and processing allowances from the value of these products before royalties are calculated. Prior to the revision of the product value guidelines for oil and gas which became effective on March 1, 1988, companies had to secure MMS approval before claiming allowances. The new regulations permit companies to take these allowances subject to later review. The regulations require MMS to monitor, review, and audit these allowances.

In response to a recommendation identified in the BSPI, MMS is developing an automated allowance monitoring and review system which will determine if a company is claiming an allowance without having filed an allowance form or if the amount claimed is inconsistent with the allowance form on file. Funds requested under this proposal will provide for reviewing and sending bills to companies and for follow-up to assure that billed amounts are collected. Once this system is fully operational, MMS believes that substantial additional royalties may be recovered.

Fiscal Accounting Contract (+$960,000)

An increase of $960,000 is proposed to perform new workloads for fiscal accounting services and to assure that service levels are maintained at an adequate level. The RMP's central mission consists of the:

- Accurate and timely collection, verification, and distribution of mineral revenues.
- Distribution of royalty accounting data to BLM, BIA, States, and Indians.
- Observance of a comprehensive system of internal controls.

Within this broad range of responsibility, RMP experiences a steady growth in the workload and complexity of the accounting processes.

The increase in contractor staffing is needed to handle the following new workloads and duties associated with previous agency commitments and new program requirements:

- Greater workload in AFS exception processing due to the conversion of the last major payor to the system and the implementation of the Federal Insufficient Estimates Module on the AFS.

- Review of 90,000 selling arrangements affected by new product valuation regulations and repeal of the Windfall Profit Tax.

- Greater error correction workload due to the conversion of the last major payor to the AFS and the upgrading of error edits as recommended by the General Accounting Office (GAO) and the Office of the Inspector General (OIG).

- Greater level of system testing due to BSPI improvements.

- Additional workloads associated with new regulatory and program requirements.

This proposal would provide funding for 27 contract staff years of effort to meet the requirements stated above.

Increases of Contract Costs of Ongoing Activities (+$230,000)

An increase of $230,000 is proposed to address the increased costs of maintaining the base level contract effort for accounting activities. In FY 1991, 44 percent of the workload in the fiscal and production accounting functions will be carried out by contractor staff. The accounting services contract covers such vital functions as AFS exception processing, error correction, and reference data base maintenance, and PAAS error correction and exception resolution. Because most MMS contracts include adjustments for normal salary increases and other associated costs, the amount of work which can be accomplished with an unchanging funding level declines each year.

During the past several years, the costs of obtaining contract support have increased by an average of 4 percent per year. Further, contract costs are expected to increase by at least that amount during FY 1990.

This proposed increase is necessary to enable MMS to meet its mission responsibilities at an acceptable level of performance. Without this increase, the AFS and PAAS data bases may become less accurate and error rates will increase. This may cause disbursements to States to be delayed, thus incurring interest charges. Additionally, new exception processing backlogs may develop and revenues may be lost as fewer exceptions can be worked.

Centralized Training (-$24,000)

A transfer of $24,000 is being made to the Administrative Operations subactivity of the General Administration budget activity due to the centralization of certain training activities. This transfer is discussed in detail in the increase statement of the Administrative Operations subactivity.

Distribution of change by object class

The object class detail for the proposed change is as follows:

	Amount ($000)
Personnel Compensation............	+64
Personnel Benefits................	+13
Other Services....................	+1,256
Equipment.........................	-24
Total.......................	+1,309

Justification of Program and Performance

Activity: Royalty Management
Subactivity: Mineral Revenue Compliance

(Dollar amounts in thousands)

Subactivity		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc.(+) Dec.(-) from Base
Mineral Revenue Compliance	$	18,636	18,374	18,596	21,789	+3,193
	(FTE)	(303)	(303)	(302)	(339)	(+37)
Total Requirements	$	18,636[1]	18,374	18,596	21,789	+3,193
	(FTE)	(303)	(303)	(302)	(339)	(+37)

Impact of Public Law 99-177

(In thousands of dollars)

	FY 1990 Enacted To Date	P.L. 99-177 B. A. Cancellation	FY 1990 Adjusted Appropriation
Mineral Revenue Compliance	18,636[1]	-262	18,374

In FY 1990, the Mineral Revenue Compliance subactivity must absorb a Gramm-Rudman-Hollings (GRH) sequestration of $212,000 associated with ongoing compliance activities and another $50,000 associated specifically with MMS's audit acceleration initiative. Reduction of compliance resources by these amounts will affect the overall MMS audit strategy by postponing some discretionary work, causing MMS to experience delays in some audit completion dates. With funding reduced, fewer new auditors can be hired and delays will occur in MMS's efforts to place audits on a current schedule.

Objectives

- o To provide accurate and effective product value guidance to royalty payors which will better assure that royalties paid on all products removed from Federal and Indian lands are in accord with law and regulation.

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[1] See Footnote on page MMS-22.

- To assure that those who report and pay to MMS are in compliance with statutes and regulations governing royalty payments and that revenue due from mineral production on Federal and Indian lands has been properly reported and paid.

Program Description

The Mineral Revenue Compliance subactivity consists of three functions: (1) product valuation, (2) audit, and (3) other compliance activities.

The product valuation function provides the technical support, including product valuation and allowance monitoring and review, needed by the RMP to assure that royalties are being calculated on the market value of minerals produced from Federal, Indian, and OCS lands; prepares regulations and guidelines to be used in valuing minerals for royalty purposes; provides regulatory training to RMP and industry on new and revised product valuation and allowance regulations and guidelines; approves certain transportation and processing allowances which are deducted by payors from royalty payments; and provides advice and assistance on valuation, appeals, and allowance issues.

Within the audit function, MMS performs audits of mineral revenue and payor activities. This function also includes resolution of exceptions which have been identified by automated royalty management systems, but cannot be resolved by other RMP organizations. The MMS audit staff also undertake special audits and reviews in support of MMS and BLM lease management activities and in response to requests from Indians, through the BIA. Delegated or cooperative audit agreements with States and Indians under the provisions of FOGRMA are monitored to assure that audit work is being performed in accord with applicable standards, applicable regulations, and statutes.

Other activities in the Mineral Revenue Compliance subactivity include: an effort to provide contact and assistance for the external user community; e.g., States, Indians, industry, the public, and other Government entities, and the development and promulgation of regulations.

Product Valuation

Royalty payments due are based on the value of the commodity produced, the volume of production sold, and the royalty rate applicable to the lease. In the past, the product value reported by the lessee (normally the sales price) was usually accepted as the value for royalty purposes. The value of the commodity, however, cannot always be determined by the reported sales price. Several factors add to the complexity in determining the value of the commodity sold, such as vertically integrated companies selling to themselves, Government price controls, long-term sales contracts, complicated marketing agreements, and complex relationships among the various owners and operators of producing leases. As a result of these complexities, new product value regulations for oil and gas were published and went into effect on March 1, 1988. These new regulations provide more definitive and consistent guidance to industry for valuing production from Federal and Indian leases for royalty purposes.

Shortly after publication, a lawsuit was filed against these rules. To settle this lawsuit, it was decided that several issues would be considered by means of proposed rulemakings. By the end of 1988, MMS had prepared and issued Federal Register Notices on extraordinary cost allowances, percentage-of-proceeds contracts, and the royalty liability on take-or-pay payments. The MMS also prepared draft Federal Register notices on gas valuation benchmarks and dual accounting. On November 8, 1988, a final rulemaking which deleted take-or-pay payments from the definition of gross proceeds was published in the Federal Register. Final action on the remaining issues is expected in FY 1990.

Final rulemaking for coal product valuation was published and became effective on March 1, 1989. Due to a controversy over the exclusion of the cost of certain taxes and fees from value for royalty purposes, the Secretary directed the Department to review the revised regulations. As a result, the Department is proposing to amend its rule for determining the value of coal. Proposed geothermal rules were published in the Federal Register on January 5, 1989. A public hearing to discuss the proposed geothermal regulations was held in Denver, Colorado, on March 28, 1989.

In FY 1991, the Royalty Valuation and Standards Division (RVSD) will continue to provide valuation and allowance approvals as required under both the old and the new regulations. It will also provide assistance to MMS's Appeals Division and advice and assistance to industry and other parties affected by the regulations. The RVSD will also develop oil and gas valuation and allowance guidelines which will become chapters in the MMS Payor Handbook. The intent of these guidelines is to provide further clarification and interpretation of MMS's new regulations.

The new valuation regulations specify that all royalty values reported and transportation and processing allowances claimed by lessees are subject to monitoring and review. To provide for this requirement, MMS is developing an automated allowance exception processing system to assist in regulatory compliance and monitoring. This system is scheduled to be operational in late FY 1990. Additionally, MMS will perform automated comparisons to assure that only those lessees who have filed the appropriate allowance forms are reporting and claiming allowances. The MMS will also perform automated checks to assure that revised allowances match actual allowance costs incurred (such checks will be performed after the end of the allowance period). In addition, the MMS will assess the feasibility of developing oil and gas product value data bases for the purpose of performing automated comparisons of expected values to those reported on royalty reports. The MMS will, if product value exception processing is determined to be feasible, develop and maintain product value data bases to be used for exception processing, majority price determinations, and major purchaser determinations. The MMS will then use the information produced by the automated comparisons to identify and select projects for detailed review. Depending on the outcome of the feasibility studies, a majority pricing system for valuing production from Indian Tribal and allottee lands is planned for FY 1991.

It is anticipated that an automated coal product value exception processing system, if feasible, will also be developed and implemented during FY 1991. The MMS is currently developing a manual allowance exception processing system for coal which will be completed in FY 1991. By focusing on allowance and valuation projects having the potential for the greatest discrepancies, MMS expects to increase the overall effectiveness of its valuation and allowance program and to provide greater assurance to the States and Tribes that royalties are being properly and timely paid.

The impact on MMS workload of implementing the new regulations is significant. Having begun in FY 1988, the MMS will continue to process: (1) a backlog of projects that are covered under the old regulations; (2) newly received projects that are covered under the old regulations, and (3) new projects that are covered under the new regulations. Projects affected by the old regulations can take place for a period of at least six years following the implementation of the new regulations, or at least until FY 1994. The current backlog of projects covered under the old regulations is expected to be eliminated in FY 1990.

SELECTED WORKLOAD OUTPUTS

A summary of selected workload outputs related to the product valuation function is presented in the following table:

	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate	Inc.(+) Dec.(-)
Valuation Determinations	83	100	100	---
Advice and Assistance	227	200	200	---
Processing Allowance Applications Reviewed	199	130	130	---
Transportation Allowance Applications Reviewed	671	170	120	-50
Appeals of Royalty Valuation Determinations	33	35	35	---
Valuation/Allowance Regulatory Training	18	10	10	---
Regulatory Compliance and Monitoring (exceptions reviewed)	---	150	2,500	+2,350

Audit

From FY 1986 through FY 1989, the MMS audit program recovered $344 million in collections from previously unpaid or underpaid royalties, interest payments, liquidated damages, and refund denials.

The MMS audit strategy provides audit coverage for mineral revenues from Federal and Indian leases. The MMS will direct the vast majority of its audit resources toward major payor company audits. The strategy proposes that audits of major payors, who submit over 90 percent of Federal and Indian revenues, be performed on a 6-year cycle. Audit coverage for remaining payors and revenues will be accomplished using sampling, system monitoring, and other special audit techniques. The FY 1991 budget request proposes a $244,000 increase to meet the increased costs of travel, training, and other audit support activities.

In addition, MMS started a major project in FY 1989, the Contemporaneous Audit Initiative, that will accelerate the completion of prior-year audits and place the 6-year cycle on a more contemporaneous schedule. Prior to the initiative, companies were often required to retain records for 7-12 years to accommodate the audit of 6 years of data. This project will minimize retention periods for companies and it will accelerate collections of any additional royalties due. We believe that this is consistent with the intent of Congress when it established a 6-year record retention requirement in FOGRMA. The MMS believes that Congress anticipated a significant lag until this equilibrium cycle could be achieved and intended that MMS be able to audit records predating FOGRMA over a reasonable number of years. However, MMS now has completed pre-FOGRMA periods for most companies and is able to move to a more contemporaneous cycle. To accomplish this initiative audit resources must be increased temporarily. The FY 1991 budget request proposes a $1,770,000 and a 26 FTE increase to support the full annual funding requirement of the Contemporaneous Audit Initiative.

Delegated and cooperative audit authority to States and Indians under the provisions of Sections 202 and 205 of FOGRMA has changed the audit strategy and approach for the MMS compliance program. The MMS audit resources are supplemented by State and Indian audit resources under the federally funded audit effort for participating States and Indians. The States and Indians have authority for most audit compliance activities with the exception of enforcement actions. The resultant audit compliance program for mineral revenues from leases of those States and Indians is a cooperative effort between MMS, State, and Indian audit resources. The remainder of the MMS audit effort provides audit coverage for offshore and other Federal and Indian mineral revenues not included in delegated or cooperative audit agreements.

The MMS's audit strategy covers the following areas: (1) company audits; (2) residency audits; (3) State and Tribal audit activities; (4) Indian lease audits; (5) net profit and Indian joint venture agreements; (6) exception resolution; (7) litigation support; (8) referrals and requests from other organizations; and (9) refund request reviews.

Company Audits

Company audits encompass a broad range of compliance review activities to assure that mineral revenues are accurately reported and paid. Company audits begin with a systematic compliance review to test the accuracy and validity of the payors' automated or manual reporting systems. After these payor systems have been evaluated, audit work is directed toward specific leases to cover the audit period.

Residency Audits

The MMS maintains "on-site" resident audit staffs located at 11 individual major companies. These audit teams are responsible for:

- Conducting ongoing audits of each company's royalty payment and reporting activities, providing guidance and technical assistance to the company in reporting through MMS accounting and auditing systems, and resolving policy and procedural questions which may arise;
- Resolving exceptions identified by AFS, PAAS, and BRASS;
- Resolving problems identified through the MMS offshore inspection program, the BLM onshore inspection programs, OIG, or other sources;
- Coordinating requests for information related to audit work at the company from MMS auditors and from States and Indian Tribes that conduct cooperative and delegated audit activities;
- Conducting financial reviews of royalty rate reduction requests and making recommendations regarding acceptance or rejection;
- Performing continuous audit of company records which cover functional areas such as valuation, allocation, production, gas plants, and accuracy of reporting; and
- Identifying and resolving special problems unique to individual leases.

The 11 companies included in this activity pay approximately two-thirds of all royalties received by MMS. A major historical focus of the residency program has been on the follow-up to findings contained in OIG audit reports. The work will be completed in FY 1990. The residency program is involved in follow-up and resolution activities involving audit issues identified in audits of the 1980-1983 business period as well as conducting audits of the 1984-1989 business period. The resident audit work force also reviews refund requests from the company.

State and Tribal Audit Activities

Eight States (California, Colorado, Louisiana, Montana, North Dakota, Oklahoma, Utah, and Wyoming) have executed delegated audit agreements under the provisions of section 205 of FOGRMA. Additional States (New Mexico and Texas) will probably enter into section 205 delegated audit agreements soon. Three Indian Tribes, the Navajo, the Northern Ute, and the Southern Ute, have executed funded agreements under the provisions of section 202 and one additional Tribe, the Shoshone/Arapahoe, has expressed interest in establishing an audit agreement.

In addition, MMS has unfunded joint audit agreements with States and Indian Tribes. The MMS has an agreement with the Jicarilla Apache Tribe to audit oil and gas leases; with the Navajo Indian Tribe to audit coal leases; with the State of New Mexico to share data; with the State of Utah to audit coal and geothermal leases; with the State of Montana to audit coal leases; and with the State of California to audit geothermal and sodium leases.

The MMS annual base funding to States and Indian Tribes under Sections 202 and 205 is $2.5 million. In FY 1990 State and Indian Tribal base funding was increased by about $0.7 million for States and Indian Tribes to participate in the Contemporaneous Audit Initiative. The FY 1991 budget request proposes a $0.6 million increase to expand the Indian cooperative audit program by increasing the funding level for Indian cooperative audits from 50 to 100 percent and to add up to 4 Tribes to the funded cooperative audit program.

Indian Audits

While Indian royalties represent about 2 percent of the royalties collected, the workload associated with Indian royalty management is complex and resource intensive.

The Department's role in auditing Indian mineral revenues originates from the Federal Government's trust responsibility to Indians. By treaty and law, the Federal Government has the duty to protect Native Americans and their property. In order to fulfill the trust responsibility for Indian revenues, an approach has been developed that combines systematic audit coverage of Indian revenues and resolution of specific problems that are identified and referred to MMS's Royalty Compliance Division (RCD).

The approach to auditing revenues from Indian mineral leases comprises the following elements:

- Residency audits at 11 major companies provide audit coverage for about 60 percent of the total revenue from Indian mineral leases.
- Company audits of major non-resident companies provide audit coverage for about 15 percent of the revenue from Indian mineral leases.
- Audits targeted on other predominant Indian payors provide coverage of about 20 percent of the total revenue from Indian mineral leases.
- Special audit techniques, such as statistical sampling and compliance monitoring through exception processing, provide additional coverage so that all royalty payors for Indian leases will have an opportunity for audit.
- Periodic audits of negotiated nonstandard mineral lease agreements that contain unique terms and conditions for the calculation and payment of mineral revenues provide audit coverage of these specialized leases.
- Review of specific royalty payment issues/problems on Tribal or allotted leases are identified and referred to RCD, through BIA, for resolution.
- The MMS is proposing for FY 1991 an Initiative for Indian Tribes and Allottees which will provide $432,000 and 8 FTE to initiate a spot audit approach of companies holding Indian Tribal and allottee leases, and

$132,000 and 3 FTE to expand the Office of External Affairs to provide more on-site problem resolution.

This strategy, which includes combining periodic audits with investigation of identified problems, maximizes audit coverage for the revenue from Indian Tribal and allotted mineral leases. Audit targeting is designed to consider maximum coverage of the revenue from Indian leases while reserving resources that can be responsive to specific issues and problems identified by Indian Tribes, allottees, and BIA. This approach provides a framework to enforce compliance with the laws, rules, and regulations that govern the payment of royalties on Indian mineral leases.

Net Profits and Indian Joint Venture Agreements

Special mineral lease agreements for production from OCS and Indian lands provide for sharing of the net profits from lease operations. These agreements differ significantly from the standard lease royalty calculation provisions in that they require special accounting procedures for capital accounts and allowable expenditures for lease operations. These agreements also require special auditing techniques to verify the accuracy of net profit determinations and pay-out periods for development and operating costs. Since OCS net profit leases involve major oil and gas exploration and development companies, MMS provides audit coverage through the residency teams and company audits for the major offshore payor companies. Audit coverage of the Indian Joint Venture Agreements is provided through the mobile audit teams responsible for the major Indian payor companies and the audit resources allocated for referrals from BIA to resolve royalty issues on Tribal and allotted leases.

Exception Resolution

Activities associated with the resolution of exceptions are produced by AFS/PAAS comparisons. Many of these exceptions are resolved by the Mineral Revenue Collections staff. However, when exceptions indicate systemic problems of a payor's compliance with the regulations, the case is referred to compliance offices to do a thorough on-site review to identify the underlying problems causing ongoing instances of noncompliance.

Litigation Support

Litigation support is necessary due to: (1) industry's testing in court of MMS positions expressed in demand letters, (2) implementing regulations of FOGRMA, and (3) application of product valuation regulations. Litigation support entails staff efforts such as responding to requests for documents, preparing responses to interrogatories, gathering statistical royalty data, preparing position papers in defense of the Government's position in appeals and legal actions, and preparing for and undergoing deposition. The MMS estimates that support for litigation, appeals, and Freedom of Information Act requests will be necessary for approximately 297 cases during FY 1991. Many of these cases will involve new product value regulations and other new or unique issues.

Referrals and Requests from Other Organizations

Among its commitments, RCD responds to special requests and referrals regarding potential underpayment of royalties. These requests and referrals come from BIA, BLM, OIG, GAO, other MMS units, and industry.

Refund Request Reviews

Royalty payors file formal requests with MMS for recoupment or refund of some royalty overpayments in the royalty refund process. Refund requests result primarily from overpayments on offshore leases that are governed by section 10 of the OCSLAA. However, they can result from changes in Federal Energy Regulatory Commission orders and from other overpayments on onshore Federal and Indian leases. The RCD reviews certain requests to assess the validity of the claim for overpayment and the correctness of the royalty overpayment computations. Refund request reviews are included in routine company audits whenever possible.

SELECTED WORKLOAD OUTPUTS

A summary of selected workload outputs for the audit function is presented in the following table:

	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate	Inc.(+) Dec.(-)
Company Audits	127	127	127	---
Lease/Subject Audits	310	310	310	---
Refund Request Reviews	268	268	268	---
Referrals	128	128	128	---
AFS/Production Accounting System (Case Load)	28	28	28	---
OIG Support (Case Load)	141	141	141	---
Special Projects (Compliance Enforcement	54	54	54	---
Litigation/Appeals/FOIA (Case Load)	297	297	297	---
Cooperative Audit Agreements				
--Section 202 of FOGRMA	3	4	8	+4
--Unfunded Cooperative	6	7	7	---
Delegated Audit Agreements	8	10	10	---
Residency Audit Teams	12	11	11	---

Increase from 1991 Base

(Dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
$	18,596	21,789	+3,193
(FTE)	(302)	(339)	(+37)

Initiative for Indian Tribes and Allottees (+$1,179,000, +11 FTE)

An increase of $1,179,000 and 11 FTE is proposed to provide additional auditing and other services to Indian Tribes and allottees to help assure that they are receiving all revenues due them. This proposal would provide $615,000 to expand the cooperative audit program with the Tribes, $432,000 and 8 FTE to initiate a spot audit approach of companies holding Indian Tribal and allottee leases, and $132,000 and 3 FTE to expand OEA to provide more on-site problem resolution.

This increase addresses concerns raised by the Indian community and recommendations made by the Senate Select Committee on Indian Affairs. Related increases for IITA are being requested in the Mineral Revenue Collections and Systems Development and Operation subactivities in order to support the Secretary's trust responsibilities.

Currently, MMS has funded agreements with three Indian Tribes--the Navajo, the Northern Ute, and the Southern Ute. Several additional Tribes have expressed interest in securing funded cooperative agreements. In addition, Indian agreements are now funded at only 50 percent, while delegated agreements with States are funded at 100 percent. This proposal will provide funding for the additional Tribes and will also bring funding for each agreement to the 100 percent level. The MMS seeks to provide this funding as a matter of equity, to maintain our compliance with section 202 of FOGRMA, and to enhance the fulfillment of our Indian trust responsibility.

The MMS's comprehensive audit strategy emphasizes scheduled audits of residency and major nonresidency companies, providing audit coverage for over 90 percent of the revenues paid on Indian leases. A specific spot audit approach will augment this strategy by providing an identifiable resource for increased audit coverage of the last 10 percent of Indian payors thereby funding audits that would not necessarily take place under the current audit strategy. Specific emphasis will be placed on allottee leases.

The MMS proposes to expand OEA to improve issue resolution with Tribes and allottees. This is accomplished through meetings with groups such as Tribal chairpersons, Tribal councils, Tribal auditors and attorneys, allottee associations, and individual allottees. These expanded efforts will allow MMS to better inform Tribes and allottees of RMP functions and they will enable MMS to more effectively address specific issues identified by the Tribes and allottees.

The OEA will also perform additional desk reviews upon request which help resolve allegations of specific accounting and reporting problems. A desk review is an internal review of the lease based on information in MMS, BIA, and BLM files. It does not include a review of company data. Once a problem is identified, the OEA will refer it to the appropriate program office in RMP for resolution. This proposal will enable MMS to be more responsive to problems encountered by the Indian community.

Contemporaneous Audit Initiative (+$1,770,000; 26 FTE)

An increase of $1,770,000 is requested to fund the second full year of a one time project to place the audit cycle at the 11 residencies and at the other major payors on a more current schedule. This increase will accelerate the completion of prior royalty payment periods.

Prior to this initiative, MMS audited 6-year blocks of residency company records during the subsequent 6-year period. As a result company royalty accounting records had to be kept open for 7-12 years to accommodate this cycle. Similarly, at the 220 nonresidency major payors, a 6-year period of records was audited in the following 1-2 year period. These cycles delayed the ultimate collection of any royalties due and required companies to retain records for long periods. Under the contemporaneous audit initiative, MMS will conduct audits in shorter cycles and it will usually bill for any additional royalties within 6 years from when the original payment was made. We believe that this is consistent with the intent of Congress in establishing a 6-year record retention requirement in FOGRMA.

The MMS plans to hire additional inhouse auditors and to obtain additional assistance from State and Tribal auditors by increasing the extent of their participation in the delegated and cooperative audit program.

The resources requested under this proposal will supplement the FY 1990 request. The FY 1990 initiative contained $3,600,000 to fund:

- Forty-nine auditors to start the catchup phase at the residencies;
- Two administrative staff to support the increase in audit staff; and
- Additional delegated and cooperative audit support.

The FY 1991 proposal will provide funding to achieve the full staff level for this initiative. With this funding, MMS will obtain 26 additional auditors, for a total of 75, to conduct audits at residency and other major payor companies. Once completed, this initiative will result in:

- Faster identification and resolution of royalty payment problems;
- More timely assurance of proper royalty payments to recipients;
- Better compliance with FOGRMA's record retention provisions; and

- More certainty for all parties, including recipient States and Indians, that correct royalty payments are identified when finalizing royalty reporting transactions and periods.

Increases in Contract Costs of Ongoing Activities (+$244,000)

An increase of $244,000 is proposed to meet the increased costs of maintaining the base level contract effort and other nonpersonnel expenses associated with conducting audit and product valuation activities.

Several factors are contributing to the overall increased cost of conducting audits. Audits require onsite review of financial records. Travel expenses to conduct these audits are rising in the areas of air fare, lodging, taxicabs, and car rentals. Without an increase to cover these rising costs, a smaller number of leases will be audited from the lease base each year. This will result in the recovery of less royalties and it will hinder MMS's ability to successfully fulfill its audit strategy.

In other areas, the MMS compliance function covers such activities as:

- State and Tribal audit work;
- Space rental to conduct conferences, seminars, and training for States, Tribes, and industry;
- Communication charges between auditors in the home office and at remote locations;
- Training for the compliance work force;
- Maintenance for equipment such as typewriters, calculators, microcomputers, and photocopiers; and
- Various other contracted functions.

Without an increase to cover higher costs in these areas, the compliance activity will become increasingly less efficient as equipment cannot be repaired in a timely fashion, telephone communications are reduced, training becomes less available, and informative meetings and discussions are curtailed. The net effect would be to reduce payors' compliance with regulation and policy, diminish the confidence that States, Tribes, and industry have in the MMS compliance program, and reduce audit recoveries.

Distribution of change by object class

The object class detail for the proposed change is as follows:

	Amount ($000)
Personnel Compensation.............	+1,211
Personnel Benefits.................	+304
Travel.............................	+360
Rents, Communications..............	+39
Other Services.....................	+1,092
Supplies...........................	+63
Equipment..........................	+124
Total......................	+3,193

Justification of Program and Performance

Activity: Royalty Management
Subactivity: Systems Development and Operation

(Dollar amounts in thousands)

Subactivity		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc.(+) Dec.(-) from Base
Systems Development and Operation		$ 18,092	17,833	17,920	19,767	+1,847
	(FTE)	(85)	(85)	(83)	(83)	(---)
Total Requirements		$ 18,092[1]	17,833	17,920	19,767	+1,847
	(FTE)	(85)	(85)	(83)	(83)	(---)

Impact of Public Law 99-177

(In thousands of dollars)

	FY 1990 Enacted To Date	P.L. 99-177 B. A. Cancellation	FY 1990 Adjusted Appropriation
Mineral Revenue Systems	18,092[1]	-259	17,833

In FY 1990, the Systems Development and Operation subactivity must absorb a Gramm-Rudman-Hollings sequestration of $259,000. To absorb these reductions, MMS will reduce the level of effort on the BSPI. As a result, the project will be redefined to complete only those efforts which form the foundation of the project and all remaining enhancements will be deferred. Restructuring of the BSPI will necessitate a less efficient design and testing approach, additional software design efforts when enhancement work is restarted, and further complications associated with loss of trained staff and existing project momentum. In addition, MMS will delay the purchase of computer hardware and software, and it will delay the purchase of spare parts for its computers. As existing computers fail, these procurement delays will degrade MMS's capacity to efficiently conduct some administrative and program activities, disrupting normal operations and leaving managers and staff less able to respond timely to program requirements.

Objectives

- To maintain and operate an effective and cost efficient Automated Data Processing environment in which the RMP systems can operate.

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[1] See Footnote on page MMS-22.

- To devise and manage a program for ensuring that RMP systems operate at maximum production levels to accomplish within statutory timeframes the accurate collection and distribution of mineral revenues.

- To continually review the condition of the four large-scale automated systems (AFS, PAAS, BRASS, and STATSS) to determine the need for enhancements and changes to reflect modified program requirements.

Program Description

The Systems Development and Operation subactivity provides computer and related high-technology systems support for the Royalty Management operating programs. This includes: (1) planning, designing, and installing new software programs; (2) modifying and enhancing operating systems to meet changing needs and to increase efficiency; (3) operating and maintaining the systems; and (4) determining, obtaining, installing, and maintaining necessary hardware.

Planning, Designing, and Installing Software Systems

Since its inception, RMP has planned, designed, and installed three major operating systems (AFS, PAAS, and BRASS) plus one major data access system (STATSS).

The AFS began operations in FY 1983 and was later converted from a minicomputer configuration to a mainframe environment in order to realize the full functionality and efficiency of the system. The mainframe hardware was successfully installed in the fall of 1985 and AFS was reimplemented in the fall of 1987. For the first time, the AFS ran on the mainframe with sufficient capacity to provide on-line support for data correction and update processes.

The PAAS and BRASS were designed, developed, and placed in operation in 1984 to meet the initial operational responsibilities of the RMP. Because of the timing of their development, both systems were designed to operate on the minicomputer configuration, but will eventually be consolidated on the mainframe. As the first step in this consolidation, the final and largest phase of the production accounting workload was implemented directly onto the mainframe.

The initial PAAS phases--consisting primarily of solid mineral and offshore leases--were implemented on the minicomputer environment. However, following a 1987 departmental decision to consolidate all onshore production reporting with MMS, RMP designed, developed, and installed a mainframe-based production reporting software system patterned after the PAAS software operating on the minicomputers. The first phase of the new mainframe-based software was placed in operation in FY 1988 and has enabled RMP to handle the massive workloads associated with the onshore conversion without encountering the hardware constraints expected of the minicomputer configuration. The MMS is continuing the development of follow-on phases of this software system in FY 1990 and FY 1991.

A major element of the Royalty Management Action Plan was to improve access by States and Indian Tribes to data on the MMS systems. On April 30, 1986, AFS data from individual leases was made available to States and Indian Tribes through STATSS. Additionally, MMS provides the States and Tribes with continuous training and equipment to promote interaction with the MMS computer. As of November 1989, 11 States, 10 Tribes, and 22 BIA offices could access AFS data through STATSS. STATSS had 650 users as of November 1989 and this number is expected to remain relatively stable through FY 1991. In FY 1991, MMS will begin an equipment replacement program to replace the oldest and least reliable STATSS hardware, thereby keeping STATSS readily available to Indian Tribes and other system users.

In FY 1991, MMS will continue to assess the feasibility of developing a "majority pricing system" to collect pricing data needed by RMP staff to calculate majority prices for minerals produced on Indian lands. The intent of this new system is to meet regulatory and lease requirements and to provide assurance to Indian Tribes and allottees that royalties are being properly computed and paid.

Modifying and Enhancing Operating Systems to Meet Changing Needs and to Increase Efficiency

All four automated systems continue to need enhancement and software improvements as the systems operate in the production mode. In the case of the AFS, the system was "frozen" for over 2 years during the software reimplementation process. Many user changes were pending at the time the reimplementation process started and many other improvements, most notably those in the Business Systems Improvement Plan, have been identified since. As a result, numerous enhancements are being assigned priorities and made ready for development. These changes will provide improvements in data base structures, information access, operational efficiency, and system maintainability in the mainframe operating environment. Such improvements were not possible on the minicomputer configuration. To accommodate the additional workload on the mainframe as well as to maintain the schedule for converting all workload from the minicomputers to the mainframe, MMS proposes to purchase an upgraded central processing unit (CPU) in FY 1991.

Enhancement of the BRASS and PAAS systems is also an ongoing process as users identify improvements after they have used the systems for a period of time. These improvements, or enhancements, make the system run better and, in the long run, minimize the further escalation of operational costs by improving hardware, software, and user efficiency.

Since the implementation of AFS, PAAS, and BRASS on minicomputers and the subsequent decision to reimplement AFS to a mainframe computer, discussion has focused on RMP's long-term systems requirements. Although the mainframe computer is expected to help resolve many of the Department's system and operational needs, experience has demonstrated the need for intensive, long-term strategic planning to address data processing, accounting, auditing, internal control, and management information needs in the 1990's. To meet these needs, RMP initiated a systems improvement effort to conduct long-range strategic planning and to make appropriate recommendations as to the type and degree of systems modifications, enhancements, and overhaul needed to accomplish program goals in the most resource effective method.

The RMP used IBM's BSP methodology to evaluate the effectiveness of current systems, to identify both short-term and long-term functional improvements, and to develop a long-term strategic plan for future systems' design and implementation. This project has also incorporated detailed input from the RMAC, a group comprising representatives from States, Tribes, and industry. In Phase I of the project, completed in November 1987, RMP identified areas for improvement in the current systems. In Phase II, RMP analyzed and examined the cost effectiveness of the identified improvements and prepared a BSPI. This plan contains 5 policy and regulatory projects and 14 systems projects. The improvements contained in the plan will provide the following benefits:

- Accelerate the processing and disbursement of receipts;
- Simplify industry reporting;
- Improve relations with and services to clientele;
- Improve the efficiency and effectiveness of internal operations; and
- Minimize duplication of data collection and maintenance.

Many of the highest priority short-term improvements were implemented in FY 1989. The remaining improvement projects will be implemented as funding permits. The BSPI was originally envisioned as a three year effort to develop and implement 34 of the initial 59 systems improvement recommendations. Work on the 34 recommendations began in FY 1989. However, a more restricted funding environment in FY 1990 is causing MMS to review the original plan. As described on page MMS - 159, the FY 1990 Gramm-Rudman-Hollings sequestration is expected to reduce BSPI funding by $259,000. As a result, the project will be redefined to continue only those efforts which form the foundation of the project while all remaining systems improvements will be deferred. This restructuring of the project means that anticipated gains in efficiency and customer service will be delayed. In addition, MMS expects that costs to restart and complete the project at a later time will be higher as a result of hiring and training new contract staff.

Of the remaining 25 systems improvement recommendations, 19 have been completed, three are currently being developed, and three are not considered feasible. The MMS will continue consulting with RMP clientele on the proposed improvements.

Several workload and activity indicators are increasing substantially as a result of enhancements to RMP systems and because of the development and operation of the PAAS onshore system. For instance, input lines processed (key entered and verified) will grow from the FY 1990 level of 883,000 to 981,000 by the end of FY 1991 with the implementation of the PAAS onshore initiative. During the same period, the number of office automation stations supported (word processors, personal computers, optical readers, etc.) is expected to increase by nearly 40 percent. In addition, with the PAAS onshore project fully implemented, RMP anticipates that its computer system will have to support approximately 75 additional interactive terminal users during FY's 1990 and 1991.

Operating and Maintaining the Systems

As additional functions are placed in operation and payors/reporters are brought onto MMS systems, the operation and maintenance function takes on increasing importance. The following operation and maintenance functions are performed by contract:

- o Computer operations - Computer operations are performed in two operating environments. The mainframe computer has been running STATSS software since April 1986 and AFS software since October 1987; PAAS onshore software is being developed on the mainframe. A minicomputer configuration runs the existing PAAS and BRASS software. Once all phases of the PAAS software are fully operational on the mainframe, MMS expects the number of lines of program code maintained to decrease by approximately 720,000 due to the greater sophistication of the software in the mainframe environment.
- o Data entry - Data entry and data validation services for the three operating systems.
- o Software maintenance - Maintenance of all software for all RMP \ applications, systems testing, and the installation of fully tested software into the production mode.
- o Additional support services - In addition, support services, such as micrographics, reproduction, tape storage, and similar services, are provided.

SELECTED WORKLOAD OUTPUTS

A summary of selected workload outputs for the systems function is presented in the following table:

	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate	Inc.(+) Dec.(-)
Lines of Program Code Maintained (000)	3,480	3,570	2,850	- 720
Database Size Maintained (Megabytes)	25,860	25,970	27,370	+1,400
Contracts Managed ($000)	16,350	16,250	16,600	+350
Interactive Terminal Users Supported	630	655	705	+50
Input Lines Processed (000)	520	883	981	+98
Data Transactions Keyed (000)	5,060	5,500	5,500	---
STATSS Users Supported	650	650	650	---
Reference Documents Processed (000)	400	450	500	+50
Responses to Information Requests	800	850	900	+50
Office Automation Stations Supported	475	550	750	+200

Increase from 1991 Base

(Dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
$	17,920	19,767	+1,847
(FTE)	(83)	(83)	---

Mainframe CPU Upgrade (+$1,422,000)

An increase of $1,422,000 is requested to fund the expansion of the MMS's data processing capacity through an upgrade of the IBM mainframe's central processing unit (CPU). The additional processing capacity will allow RMP to maintain and respond to increased demands in the level of service to both RMP users and to the States and Tribes.

The original procurement of the mainframe included a system expansion path up through 1989, ending with the current KX4 system. The original procurement did not anticipate the two additional program operating systems that evolved since its award: the STATSS access system and the PAAS onshore lease accounting system. This request addresses increased processing requirements into the 1990's. Funding requested represents the annual incremental cost over current funding for a 4-year period. The request is based on a market survey of vendors offering the type of hardware being considered.

Programmatic decisions to significantly expand and enhance PAAS, to convert El Paso Natural Gas to the AFS, to integrate and enhance financial production processing on the mainframe, and to improve executive management support systems have led to an aggressive systems development schedule. To accommodate this additional workload as well as to maintain the schedule for converting all workload from the VAX minicomputer environment to the mainframe, a central processing unit upgrade will be required by FY 1991.

Without the upgraded central processing unit, utilization of the systems will exceed 80 percent of capacity by FY 1991. Eighty percent is an industry-accepted level above which systems degradation is expected to occur. Above this level the following adverse impacts will likely ensue:

- Users can expect delays in on-line response time.
- Delays and deterioration of transaction processing and report generation will occur.
- System development activities will be less efficient.
- Production scheduling flexibility and the ability to respond to user requests will be reduced.

Funding this proposal will help preclude these adverse impacts and would ensure that services to the user community are maintained at appropriate levels.

Initiative for Indian Tribes and Allottees (+$400,000)

An increase of $400,000 is proposed to develop, install, and operate software systems which support MMS's Initiative for Indian Tribes and Allottees. Indian Tribes and allottees as well as the Senate Select Committee on Indian Affairs have identified various operational needs which can be addressed through enhancement of current software systems or development of new systems. This increase will provide funding to develop, install, and operate various systems projects which support IITA objectives and further the Secretary's trust responsibilities.

Among the key enhancements under consideration is a system to facilitate majority pricing analysis. The March 1, 1988, oil and gas product value regulation contains an exception to normal valuation standards for certain Indian Tribal and allottee leases. The MMS must compare the highest value determination by the regulations to the highest price paid or offered for a major portion of production in the relevant field or area. The value of production used in computing the royalties paid to Indian Tribes and allottees must be based on the higher value. The MMS is conducting a feasibility study and exploring various options for implementing this regulation. If appropriate, MMS will develop software systems to collect pricing data for fields and areas pertaining to Indian Tribal and allottee leases; perform the necessary comparison and analysis to assure that royalties are being calculated on the proper basis; and better assure that Indian Tribes and allottees are receiving all the royalty revenues due them.

Other software efforts supporting IITA include:

- An AFS recoupment monitoring module will enable MMS to monitor unauthorized adjustments and recoupments through an exception processing routine; target problems payors; provide an opportunity to correct reporting problems without delaying distribution of revenues; increase detection of underpaid royalties; provide better service to allottees; and reduce manual effort and errors.

- An exception processing module to monitor severance taxes will enable RMP to systematically target payors who improperly deduct severance taxes; provide an opportunity to correct underpayment problems without delaying distribution; reduce the potential for human error; and respond to the concerns of Indian lease owners.

- Enhanced reporting will enable RMP to better identify and communicate possible exceptions regarding royalty rates and unit values.

- Additional operational costs area also expected regarding the allowance tracking system being implemented in FY 1990.

Replacement of State and Tribal Support System (STATSS) Equipment (+$25,000)

An increase of $25,000 is proposed for the initial step in the phased replacement of the personal computers and related peripherals used by States and Tribes to access AFS data through STATSS. This system provides States, Tribes, and BIA with access to AFS data through communication links between microcomputers located at the users' facilities and the RMP mainframe computer in Lakewood, Colorado. Currently, 11 States, 10 Tribes and 22 BIA offices have access to AFS data through STATSS. The States and Tribes use this data to monitor activity on their leases and to perform various analyses as required. Prior to the development of this system, RMP expended staff time to respond to questions raised by these entities.

This equipment replacement project will allow MMS to buy computers, monitors, printers and modems to replace the aging and malfunctioning equipment currently being used by the States and Tribes. This project will be ongoing as each year that equipment most in need of replacement is identified.

The existing equipment was provided to the States and Tribes in 1986 and will be five years old at the beginning of the phased replacement period. Maintenance and reliability problems have been increasing and are exacerbated in that some of the equipment is located at remote sites where servicing is difficult. Replacement of the equipment will better enable the States and Tribes to access the AFS through STATSS and thereby will help assure they are receiving all the royalties due them. Also, it will minimize the amount of RMP staff time that would otherwise be spent in researching and resolving various inquiries.

Distribution of change by object class

The object class detail for the proposed change is as follows:

Amount ($000)	
Other Services.....................	+1,822
Equipment..........................	+25
Total.......................	+1,847

Activity: Royalty Management
Subactivity: Indian Refunds

(Dollar amounts in thousands)

Subactivity		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc.(+) Dec.(-) from Base
Indian Refunds	$	64	63	---	---	(-64)
	(FTE)	--	--	---	---	---
Total Requirements	$	64	63	---	---	(-64)
	(FTE)	--	--	---	---	---

Impact of Public Law 99-177

(In thousands of dollars)

	FY 1990 Enacted To Date	P.L. 99-177 B. A. Cancellation	FY 1990 Adjusted Appropriation
Indian Refunds	64	- 1	63

The reduction of $1,000 in this subactivity will have no significant impact.

Refunds on Indian Allotted Leases (-$64,000)

A $64,000 decrease is proposed as obligations due certain companies were satisfied in FY 1990. These companies had successfully appealed bills that were levied on Indian allotted leases that they held. The companies were unable to recoup their overpayments as future royalty payments on these leases were small or non-existent.

Distribution of change by object class

The object class detail for the proposed change is as follows:

	Amount ($000)
Grants, Subsidies and Contributions..........	- 64
Total	- 64

Activity Summary

Activity: General Administration

(In thousands of dollars)

Subactivity	FY 1989 Actual	FY 1990 Approp Enacted	FY 1990 Adjusted Approp	FY 1991 Base	FY 1991 Estimate	Inc.(+) Dec.(-) from Base
Executive Direction	4,735	4,780	4,731	4,828	5,309	+481
Administrative Operations	10,152	10,174	10,034	10,271	10,744	+473
General Support Services	13,822	17,104	15,866	18,051	16,029	-2,022
Total Requirements	28,709	32,058[1]	31,631	33,150	32,082	-1,068

The General Administration activity provides support for the program responsibilities of MMS and is divided into three subactivities: Executive Direction, Administrative Operations, and General Support Services.

Executive Direction. The Executive Direction subactivity provides budget authority for the Office of the Director and immediate staff, the Office of Congressional and Legislative Affairs, the Office of Public Affairs, the Office of Equal Employment Opportunity, Office of the Associate Director for Policy and Planning, and Office of the Deputy Associate Director for Budget and Appeals. These functions provide for overall program leadership and direction, policy and planning, program review and evaluation, budget formulation and execution, and management coordination of all the responsibilities of MMS.

Administrative Operations. The Associate Director for Management and Budget is responsible for the administrative activities of MMS. These administrative functions include: financial management; personnel management and training; safety and health program management; procurement; property and space management; office services; personnel and physical security; information resources management functions, such as automated data processing, management analysis, records and paperwork management; and printing. In carrying out these responsibilities, the Associate Director, supported by Deputy Associate Director for Budget and Appeals, four headquarters divisions, three Field Administrative Service Centers, and a satellite office. The four headquarters divisions are Financial and Administrative Management, Personnel Management, Procurement and Property Management, and Information Resources Management.

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[1] See Footnote on page MMS-22.

General Support Services. The General Support Services subactivity includes funding for support services and fixed costs, such as rent, Federal Telecommunications System (FTS), postage, and commercial communications for MMS nationwide.

Justification of Program and Performance

Activity: General Administration
Subactivity: Executive Direction

(Dollar amounts in thousands)

Subactivity		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc.(+) Dec.(-) from Base
Executive Direction	$	4,780	4,731	4,828	5,309	+481
	(FTE)	(73)	(73)	(73)	(77)	(+4)
Total Requirements	$	4,780[1]	4,731	4,828	5,309	+481
	(FTE)	(73)	(73)	(73)	(77)	(+4)

Impact of Public Law 99-177

(In thousands of dollars)

FY 1990 Enacted To Date	P.L. 99-177 B. A. Cancellation	FY 1990 Adjusted Appropriation
4,780[1]	-49	4,731

The cancellation of $49,000 in Executive Direction will result in reduced travel and equipment purchases. This will limit management's ability to interface with regional personnel and replace equipment.

Authorization

Secretarial Order No. 3071	The order established the Minerals Management Service in January 1982, under authority provided by Section 2 of Reorganization Plan No. 3 of 1950 (64 Stat. 1262).

Executive Direction

Objective

- Provide executive leadership, policy direction, and program management for all programs and mission responsibilities.

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[1] See Footnote on page MMS-22.

Program Description

The Executive Direction subactivity is comprised operationally of the Director, Deputy Director and their immediate staffs, the Office of Congressional and Legislative Affairs, the Office of Public Affairs, the Office of Equal Employment Opportunity, the Office of the Associate Director for Policy and Planning, and the Office of the Deputy Associate Director for Budget and Appeals.

The Office of the Director is responsible for providing general policy guidance and management of the organization.

The Office of Congressional and Legislative Affairs serves as the primary point of contact between MMS and the Congress, providing information and assistance in response to inquiries by Members of Congress or congressional staff and committee personnel. Specifically, the Office evaluates, or coordinates the evaluation of, legislative proposals affecting MMS responsibilities; maintains continuing communications regarding programs and policies, items of legislative action, statements of positions on matters under consideration by the Congress, legislative initiatives, preparation and coordination of testimony for witnesses; and coordinates arrangements for congressional authorizing committee hearings and meetings, and congressional activity that affects or may affect MMS.

The Office of Public Affairs provides advice to the Director and other officials on policy and procedures for disseminating information about program activities and products to the public through the press and news media. The office also prepares and distributes news releases to the print and electronic media and responds to inquiries from the media and the public or refers such inquiries to other officials. Close liaison with the Secretary's Office of Public Affairs and counterpart offices within the Department and other agencies is maintained.

The Office of Equal Employment Opportunity develops, directs, monitors, and operates the Equal Employment Opportunity (EEO) Program in compliance with the Civil Rights Act of 1964, the Equal Employment Opportunity Act of 1972, Executive Order 11478, Departmental directives, and other related statutes and orders. Specifically, these duties include the discrimination complaint system, counseling, development and implementation of equal employment opportunity and affirmative action plans, special emphasis programs, and EEO-related training. The Office also provides expertise and leadership for other civil rights matters and technical assistance to supervisors and managers.

The Office of the Associate Director for Policy and Planning is responsible for the policy and planning of MMS and for ensuring that resources are utilized effectively in support of the missions of MMS. The functions of this organization include delineating objectives; developing and evaluating policy initiatives; determining the effectiveness of management and internal controls in meeting program objectives; and maintaining liaison with departmental offices and other Government agencies regarding program planning and evaluation. It is also responsible for monitoring and implementing policy and planning recommendations; coordinating the Bureau's management-by-objective programs; and serving as the central point of contact, control, and coordination for comments and actions resulting from General Accounting Office and Office of the Inspector General reports. The organization develops, implements, and monitors internal control systems to prevent fraud, waste, and abuse as prescribed in the provisions of OMB Circular A-123. In carrying out these responsibilities, the Associate Director is supported by two divisions: Offshore Analysis and Royalty Management Analysis.

The Office of the Deputy Associate Director for Budget and Appeals is responsible for the planning and effective utilization of budgetary resources in support of the varied operating and support programs and for the adjudication of appeals resulting from decisions made by operating officials of MMS. These functions are carried out by the Budget and Appeals Divisions.

The Budget Division provides analysis, budget guidance, and recommendations regarding budget and program formulation and justification; assures proper funding and staffing allocation and budget execution in accordance with the law, congressional, departmental, and bureau program directives, goals, and objectives; develops, prepares, and maintains budget data; and provides analysis of financial and other resource use reports. The Division is also responsible for assisting in the presentation and explanation of budget submissions to the Department, the Office of Management and Budget (OMB), and the Congress.

The Appeals Division administers the appeals process within the MMS through direct staff support of the appellate responsibilities of the Director (and the Deputy Assistant Secretary - Indian Affairs in appeals cases involving Indian lands) pursuant to 30 CFR Part 290 - Appeals Procedures. Specifically, the Appeals Division reviews, considers, and prepares recommended decisions on matters within the jurisdiction of the MMS in accordance with existing policies, regulations, and procedures. These responsibilities include program and policy liaison and coordination between the various MMS programs, other Bureaus and departmental offices, and various segments of the Federal Government and the private sector.

Increase from FY 1991 Base

(Dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
$	4,828	5,309	+481
(FTE)	(73)	(77)	(+4)

Appeals review and processing (+$181,000, +4 FTE)

The Appeals Division is responsible for the review and analysis of appeals to the Director which contest the payment of royalties and for the preparation of decisions. Appeals decisions are also prepared for the Deputy to the Assistant Secretary - Indian Affairs for Indian leases. Appeals decisions were prepared for $133 million of contested royalties in 1989.

Figure 5, below, portrays the significant increase in the number of cases on the docket and number of completed cases in each year since 1981. The increase beginning in 1984 is principally due to the enforcement of the Federal Oil and Gas Royalty Management Act of 1982 and the conduct of more audits.

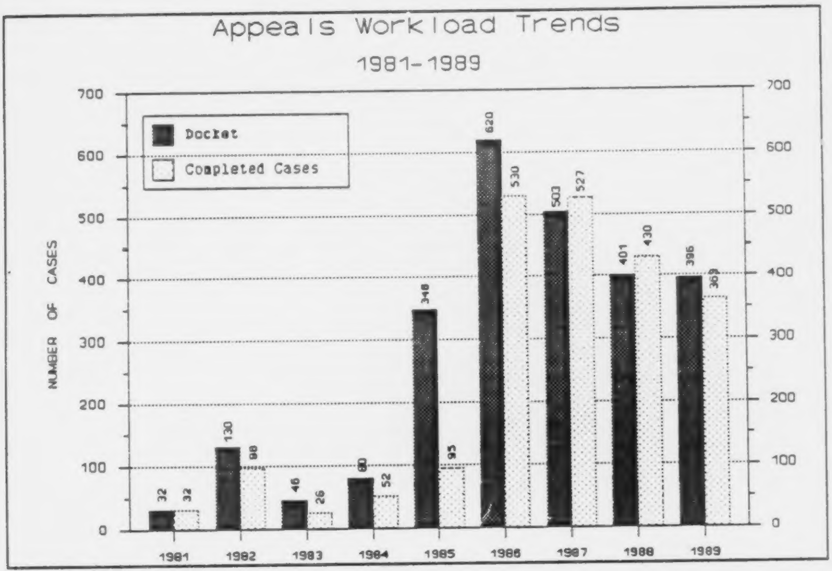

Figure 5

The workload is expected to increase in number and complexity in FY 1991 and beyond. These appeals will be more complex than those completed in 1986 and 1987 since they dealt routinely with late and erroneous reporting. The number of appeals is expected to increase because industry and MMS use the appeals process to test and further define new regulations (e.g. new product value regulations and across-the-board policy changes) and to correct errors and oversights. The appeals will, therefore, require more time to analyze and research than in the past. The proposed increase will provide the personnel support to reduce the current docket of 406 cases and to process the anticipated increase in new appeals.

Distribution of change by object class

The object class detail for the proposed change is as follows:

	Amount ($000)
Personnel Compensation.................	+141
Personnel Benefits.....................	+40
Total...........................	+181

Equal Employment Opportunity (EEO) Recruitment Program (+$300,000)

Interior's goal is to involve more women and minorities in all facets of the programs and at all management levels in an effort to exceed the minimum equal opportunity requirements. Interior bureaus are continually seeking ways to enhance the recruitment, training, and advancement within the Department of women and minorities, particularly in such critical professional areas as engineering, science, accounting, and computer programming. A total of $300,000 is being proposed for the women and minorities effort. The types of activities to be carried out by MMS include the following:

o Participation in career and job fairs at the high school and college levels and interacting with local and national organizations concerned with the development and employability of these groups. The recruitment efforts will also be strengthened to obtain and employ the individuals who qualify for these occupations.

o Preparation of a career development plan will also be implemented to provide guidance, training, and advancement opportunities for under utilized women and minorities. This plan will require increasing usage of the Cooperative Education Program, the upward mobility program, worker-trainee program, and expanding participant levels in the MMS Management Development Program and the Department of the Interior Management Development Program. Increased participation in these programs by women and minorities will result in a more equitable distribution and representation in the workforce.

o Training will be offered to managers and supervisors in employee development and human resource planning and in improving the quality of the work life. Addressing these issues and effecting change is necessary in preventing employee complaints and grievances while ensuring a productive and efficient workforce.

Distribution of change by object class

The object class detail for the proposed change is as follows:

	Amount ($000)
Travel	+20
Printing & Reproduction	+5
Other Services	+250
Supplies	+5
Equipment	+20
Total	+300

Justification of Program and Performance

Activity: General Administration
Subactivity: Administrative Operations

(Dollar amounts in thousands)

Subactivity		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc.(+) Dec.(-) from Base
Administrative Direction and Coordination	$	528	528	541	561	+ 20
	(FTE)	(11)	(11)	(11)	(11)	(---)
Financial Management	$	1,707	1,682	1,722	1,784	+ 62
	(FTE)	(41)	(41)	(40)	(40)	(---)
Personnel Management	$	1,326	1,307	1,338	1,489	+151
	(FTE)	(28)	(28)	(28)	(29)	(+1)
Procurement and General Services	$	1,506	1,484	1,519	1,574	+ 55
	(FTE)	(33)	(33)	(33)	(33)	(---)
Information Resources Mgmt	$	1,255	1,237	1,266	1,312	+ 46
	(FTE)	(20)	(20)	(20)	(20)	(---)
Field Admin Services	$	3,852	3,796	3,885	4,024	+139
	(FTE)	(97)	(97)	(96)	(96)	(---)
Total Requirements	$	10,174[1]	10,034	10,271	10,744	+473
	(FTE)	(230)	(230)	(228)	(229)	(+1)

Impact of Public Law 99-177

(In thousands of dollars)

FY 1990 Enacted To Date	P.L. 99-177 B. A. Cancellation	FY 1990 Adjusted Appropriation
10,174[1]	-140	10,034

As a result of sequestration in FY 1990, equipment replacements and upgrades will be delayed.

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[1] See Footnote on page MMS-22.

Authorizations

31 U.S.C. 65	Budget and Accounting Procedures Act of 1950
31 U.S.C. 3901-3906	Prompt Payment Act of 1982
31 U.S.C. 3512(c)	Federal Managers' Financial Integrity Act of 1982
5 U.S.C. 552	Freedom of Information Act of 1966, as amended
31 U.S.C 7501-7507	Single Audit Act of 1984
41 U.S.C. 35-45	Walsh Healy Public Contracts Act of 1936
41 U.S.C. 351-357	Service Contract Act of 1965
41 U.S.C. 601-613	Contract Disputes Act of 1978

Authorizations

44 U.S.C. 35	Paperwork Reduction Act of 1980
44 U.S.C. 2101	Federal Records Act of 1950
40 U.S.C. 486(c)	Federal Acquisition Regulation of 1984
31 U.S.C. 3501	Privacy Act of 1974
31 U.S.C. 3501	Accounting and Collection
31 U.S.C. 3711,3716-19	Claims
31 U.S.C. 1501-1557	Appropriation Accounting
5 U.S.C. 1104 et seq.	Delegation of Personnel Management Authority
31 U.S.C. 665-665(a)	Anti-Deficiency Act of 1905, as amended
41 U.S.C. 252	Competition in Contracting Act of 1984
18 U.S.C. 1001	False Claims Act of 1982
18 U.S.C. 287	False Statements Act of 1962
41 U.S.C. 501-509	Federal Grant and Cooperative Agreement Act of 1977
41 U.S.C. 253	Federal Property and Administrative Services Act of 1949

41 U.S.C. 401	*Office of Federal Procurement Policy Act of 1974, as amended*
15 U.S.C. 631	*Small Business Act of 1953, as amended*
15 U.S.C. 637	*Small Business Act Amendments of 1978*
10 U.S.C. 137	*Small Business and Federal Competition Enhancement Act of 1984*
15 U.S.C. 638	*Small Business Innovation Research Program of 1983*
10 U.S.C. 2306(f)	*Truth in Negotiations Act of 1962*

Administrative Operations

Objective

- Provide continuing administrative direction and coordination to support the Outer Continental Shelf Lands and mineral revenue collection programs of the MMS.

Program Description

The Administrative Operations subactivity consists of the following functions: Administrative Direction and Coordination, Financial and Administrative Management, Personnel Management, Procurement and Property Management, and Information Resources Management. These functions are directed and carried out at headquarters and nationwide through three Field Administrative Service Centers (ASC's) and a satellite office.

Administrative Direction and Coordination is carried out by the Associate Director for Management and Budget through the Deputy Associate Director for Administration and immediate staff. The staff is responsible for (1) compliance with laws relating to administrative activities; (2) the review, interpretation, and implementation of Federal executive branch administrative policies and procedures; and (3) the development of appropriate organizational guidance to ensure compliance with Department, Office of Management and Budget, General Services Administration, and other executive branch administrative policies and regulations. The Deputy Associate Director is also responsible for the oversight of administrative activities of the MMS, including financial management, personnel management and training, management analysis, management of automated data processing, procurement, property and space management, office services, records management, personnel and physical security, safety, and the printing of publications. Liaison is maintained with departmental offices in order to effect a coordinated and unified administrative program consistent with the mission and goals of the Department. The Deputy Associate Director for Administration provides direct administrative support to managers nationwide.

The Security Officer also reports to the Deputy Associate Director for Administration. The security program encompasses personnel security, physical security, and document security Bureauwide. Specific duties include: identifying sensitive positions; initiating, through the Office of Personnel Management, personnel background investigations; adjudicating completed investigative reports; issuing suitability certifications and ADP authorizations; granting national security clearances; providing guidance to collateral duty security personnel and security training for employees; investigating security violations, incidents, and thefts; building security; and conducting security inspections.

Financial and Administrative Management Division (FAMD) is responsible for administering the financial management and administrative services programs. FAMD operates the administrative accounting systems, provides payroll liaison functions, audits and schedules bills for payment, collects debts, manages imprest fund activities, develops financial data, prepares financial reports, provides advice and assistance on financial matters, and maintains liaison with departmental offices and other Government agencies. This Division is also responsible for facilities management; transporting of goods/materials; voice telecommunications operations; mail management; safety and health programs; records and paperwork management; directives; organizational and management studies; regulations processing; the information collection budget; productivity improvement, including A-76; and compliance with the Privacy Act, Freedom of Information Act, and Paperwork Reduction Act compliance. Technical direction is provided nationwide through the issuance of policy and onsite assessment and assistance.

Secretarial Order No. 3111, dated December 20, 1985, consolidated all responsibility in the Bureau of Reclamation (BOR) for the maintenance and operation of the Department's payroll system. The MMS reimburses BOR for the costs associated with the program. The FAMD provides processing support for the entry of payroll data and serves as liaison for MMS.

In the areas of management analysis and records management, FAMD conducts management reviews, systems studies, analyses, productivity initiatives, and special projects. One or more reviews will be conducted under productivity improvement initiatives. The Division will continue to provide advice, counsel, and direction on organizational activities; will analyze and process organizational structures for implementation; provide guidance to program offices on the preparation, review, and issuance of Federal Register documents and delegation of authorities; manage the directives system; and provide policy and procedural review to ensure compliance with regulations and utilization of enhanced records and information management technologies. Emphasis will continue on efforts to aid MMS in meeting its information collection budget requirements.

The safety and facilities management program will continue to oversee assigned space in 31 buildings in 21 cities. Responsibilities include: operation of a consolidated facility in the Northern Virginia area; processing space requests and reimbursable work authorizations; conducting space utilization surveys, safety inspections of facilities, and annual space inventories; and issuing facilities management, voice communications, and mail management policy and guidelines Bureauwide. Responsibilities also include: coordinating office moves and telephone design and ordering; providing mail delivery services, overseeing a Bureauwide metered mail system, airline ticket deliveries, messenger services, mail shipments, household goods, and bulk shipments; and managing general services contracts for shuttle and courier services and a highly technical computerized telecommunications system. Safety responsibilities include developing and implementing a safety program; investigating accidents and incidents; providing employees with safety training; and overseeing the disposal of toxic materials.

SELECTED WORKLOAD OUTPUTS

A summary of selected workload outputs for the Financial and Administrative Management Division are:

	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate	Inc. (+) Dec. (-)
Obligations Recorded	18,000	18,250	18,500	+250
Auditing & Paying Invoices	24,200	24,000	24,000	---
Auditing & Paying Travel Vouchers	8,500	9,000	9,500	+500
Miscellaneous Financial Documents Processed	5,000	5,500	5,500	---
Cash Management Reports Processed	16	16	16	---
Debt Management Reports Processed	16	16	16	---
Financial Policies & Procedures Developed	7	8	8	---
Internal Reports Prepared	100	100	100	---
External Reports Prepared	60	60	60	---
Conduct Management Reviews/Studies	11	6	6	---
Monitor Federal Register Cost Accountability	184	200	200	---
Review Policy Documents (Directives System)	80	100	120	+20
Analysis of Organization Proposals	19	20	20	---
Process Other Documents	455	435	435	---
Conduct Records Management Training	2	5	3	-2
Conduct Space Utilization Studies/ Layouts	2	2	2	---
Design Office Space Layouts	375	50	50	---
Plan and Implement Inhouse Moves	375	50	50	---
Process Telephone Orders	2,000	225	225	---
Handle Telephone Complaints	700	400	400	---
Conduct Bureau Safety Inspections	6	6	6	---
Investigate Accidents/ Incidents	55	60	70	+10

Personnel Management is carried out by the Personnel Division. This organization develops and implements Bureauwide policies, procedures, guidelines, and standards related to general personnel management; recruitment and employment; position management and classification; training and career development; personnel program evaluation; labor/management relations; employee relations and services; conflict of interest and ethics; incentive awards; the Federal Equal Opportunity Recruitment Program (FEORP); and public policy programs. The Division also provides assistance and guidance on personnel matters to all levels of management in developing and administering personnel programs as well as personnel program direction to field personnel offices. This involves day-to-day and long-range personnel planning, evaluation, and operational activities in: employment; employee relations and services; labor relations; special interest programs; affirmative action; conflict of interest; motivation; discipline; performance evaluation; monetary awards; insurance and annuities; attendance and leave; appointments and processing; and a variety of personnel reports, records, and statistics. Liaison is required with the Office of Personnel Management, the Department of the Interior, Office of the Inspector General, and the Federal Labor Relations Authority on personnel management and related issues.

In FY 1991, two personnel management evaluations are planned. These evaluations will cover operating practices; merit promotion and recruitment; classification accuracy; performance management; compliance with governing policies, regulations, and guidelines; management assistance activities; and personnel processing. Increased emphasis will be given to supervisory and managerial development training with the continuance of the Minerals Management Service's Managerial Development Program, participation in the Departmental Managerial Development Program, and development of a new MMS policy regarding basic training for new supervisors and managers. Technical and administrative training will be addressed more specifically and actual training scheduled and carried out in the MMS training facility in the Atrium Building. With the purchase of computer hardware for the training room, more in-house computer training will also be scheduled. With the implementation of the automated SF-52 tracking system, the Personnel Division will be providing technical support and taking the lead in ensuring that the system functions optimally. The Bureau of Reclamation's conversion of the personnel and payroll system will also require heavy involvement in technical requirements and the actual conversion process (e.g., training, development of user manuals, and data conversion). Portions of the Minerals Management Service Manual (MMSM) will continue to be revised as changes are made to Federal personnel regulations or to reflect changes in MMS policy.

SELECTED WORKLOAD OUTPUTS

A summary of selected workload outputs for Personnel Management are:

	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate	Inc. (+) Dec. (-)
Positions Reviewed	250	250	200	-50
Vacancy Announcements Processed	120	120	120	---
Classification Audits Conducted and Positions Reviewed	100	100	100	---
Personnel Actions Processed	2,500	2,500	2,500	---
PAY/PERS Processing	3,500	3,500	3,500	---
Employment and Financial Interest and Public Disclosure Statements Processed	2,000	2,150	2,150	---
Personnel Management Evaluations Conducted	1	2	2	---
Personnel Policies/ Procedures Issued	50	50	50	---
Training Requests Processed & Reviewed	1,500	1,500	1,500	---
Executive/Managerial Training Processed	150	150	150	---
Training Courses Developed/Presented	16	20	20	---
Performance Appraisal/ Merit Pay Reviews Conducted	1,000	1,200	1,200	---
Employee Relations Cases Processed/ Guidance Given	900	900	900	---
Labor Relations Cases Processed/Guidance Given	150	200	225	+25
Worker Compensation Cases, Incentive Awards, Beneficial Suggestions, and Retirements Processed	440	440	440	---

Procurement and Property Management. The Procurement and Property Management Division develops and implements policies, procedures, and standards for the execution and administration of the procurement and property management programs. The programs are designed to ensure the formulation and implementation of practices and procedures that will produce effective, economical project results in compliance with applicable laws, regulations, and sound business decisions. Technical direction is also provided to the ASC's and a satellite office through the issuance of policy guidance and by field reviews and visits.

The Division is responsible for two distinct programs in support of MMS:

1. Procurement. The procurement program includes entering into and administering contracts, small purchases, grants, cooperative agreements, and interagency agreements essential for fulfilling the mission of the MMS. Other responsibilities include managing the Small and Disadvantaged Business Utilization Program and Historically Black College and University (HBCU) Program; conducting acquisition management reviews of field offices; conducting cost and price analyses; developing annual Advance Procurement Plans; and issuing procurement policy guidance to a variety of target groups, including private industry, senior management, contracting officers, and the Offshore and Royalty Management Programs.

2. Property Management. The property program maintains accountability records for over 10,000 line items of property valued at approximately $30 million. Specific responsibilities include conducting an annual inventory of property assigned to over 190 accountable and custodial property officers using bar code technology; managing a nationwide data system, including property in the possession or control of contractors; managing a Departmental Fleet Management System; managing a printing and publications activity; managing a warehouse facility; managing and operating a supply store; managing a contractor operated copy center; managing a duplicating and copying program; and issuing policy guidance on property, supplies, and printing, duplicating, and copying.

   The MMS established a property management system for the Office of Surface Mining Reclamation and Enforcement (OSM) under an intra-agency agreement. In FY 1991 MMS will provide the required services in maintaining the system on a reimbursable basis.

SELECTED WORKLOAD OUTPUTS

A summary of selected workload outputs for Procurement and Property Management are:

	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate	Inc.(+) Dec.(-)
Award Contracts	250	230	245	+15
Award Small Purchases	1,600	1,650	1,700	+50
Administer Contracts	370	395	420	+25
Conduct Acquisition Management Reviews:				
Primary	1	1	2	+1
Follow-up	0	1	---	-1
Update Property Management Records	8,230	8,500	9,000	+500
OSM Transactions	6,178	4,300	1,000	-3,300
Contractor-Property Transactions	0	800	1,300	+500
Conduct Property Management Reviews of ASC's	1	1	1	---
Issue Individual Inventories of Controlled Property	225	200	200	---
Review Property Survey Board Actions	20	20	20	---
Process Printing Requests	451	500	600	+100
Desk Top Publishing	46	50	100	+50
Issue Supplies:				
Filling Orders	---	1,500	2,000	+500
Ordering/Restocking	---	1,000	1,500	+500
Inventory Reconciliation	---	2,000	2,500	+500
Develop Procurement Policy Directives	22	25	25	---
Issue Information Requests or Transmittals	90	100	100	---
Prepare Pricing Reports:				
Pre-award	60	50	45	-5
Closeout	20	12	30	+18
Process Audit Requests:				
Pre-award	20	20	20	---
Closeout	11	11	20	+9
Initiate, Review, and Implement Special Projects	300	325	350	+25
Analyze, Revise, or Provide Written Guidance on Procurement Approval Requests	26	30	35	+5
Review and Adjudicate GAO/OIG/Departmental (PAM) Audit Investigations	5	10	10	---
Respond to GAO/GSA/CO Protests	0	5	5	---
Conduct Internal Control Reviews	1	2	2	---

Information Resources Management (IRM). The IRM Division is responsible for direction and review of the MMS's IRM programs. These include planning, analyses, and direction for data administration and telecommunication; office automation; security of data, systems, and equipment; and operation, maintenance, and improvement of the administrative systems, such as the Advanced Budget/Accounting Control and Information System (ABACIS) and Payroll/Personnel System (PAY/PERS).

In FY 1991, the Division will issue the annual MMS Automated Data Processing (ADP) Strategic Plan, providing the Department consolidated budgetary and planning information on the MMS's ADP activities and future programs. The Division will also participate in Bureauwide efforts identified in the MMS ADP Strategic Plan, such as cyclical reviews of current systems; telecommunications activities; common data elements and standards between program areas; information resources security; awareness of and analysis of ADP costs; future ADP hardware, microcomputer, and electronic mail policy; and analysis of ADP roles and responsibilities. The plan calls for development of a number of new administrative systems, consistent with Department wide systems initiatives, (e.g., an integrated property and procurement system, an improved activities/correspondence control system, and ad hoc retrievals under the new Federal Personnel Payroll System). Some of these tasks will be initiated in FY 1991.

The Division will continue to provide administrative and technical support to the ADP Review Council in the planning and oversight of ADP projects. The Division will participate in implementing and executing a departmental Strategic Framework for Information Resources Management to increase productivity, improve the management and delivery of information, and increase effectiveness in the use of technology. The system life cycle management, the IRM review, and the ADP security programs will continue.

Maintenance efforts and improvements to existing administrative systems will continue. Support of the Office of Surface Mining's controlled property tracking requirements will continue to be provided using the Property Management System. Similarly, the departmental requirement to furnish data on vehicle costs will be satisfied for both MMS and OSM by means of the Vehicle Maintenance Systems (VMS). Assistance will be given, as required, in the conversion efforts to the Federal Personnel Payroll System (FPPS). This will require significant development efforts to accommodate new requirements in a new hardware and software environment. Existing hardware and software will be evaluated for utility in supporting the new departmental system, and expected procurements should be accomplished early in the fiscal year. Support for Headquarters microcomputer users and local area networks will continue, and connectivity among program functions will be reviewed and enhanced. The Administration local area network will become fully implemented with all Divisions participating.

SELECTED WORKLOAD OUTPUTS

A summary of selected workload outputs for Information Resources Management are:

	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate	Inc.(+) Dec.(-)
Maintain/Operate Administrative Systems	17	16	17	+1
Develop/Enhance (Major) Administrative Systems	7	7	5	-2
Operate Vendor-Supplied Systems	8	11	20	+9
Issue MMS ADP Strategic Plan	1	1	1	---
Conduct ADP Security Reviews	2	3	5	+2
Participate in Departmental IRM Projects	6	6	6	---
Respond to Requests for ADP Data	10	9	8	-1
Perform Studies of Bureau ADP/Telecommunications Operations	7	6	6	---
Prepare Planning Documents (5 yr. ADP/Telecommunication Plan)	3	3	3	---
ADP Acquisition Reviews	400	500	500	---

Field Administrative Services. Direct administrative support is provided to program managers through three Field Administrative Service Centers (ASC's) and a satellite office. These ASC's provide services to all field activities of the MMS, except for the Atlantic OCS Region, which receives support directly from the Office of Administration in Herndon, Virginia.

The Office of the Deputy Associate Director for Administration and the ASC's are structured to assist managers in matters related to personnel, safety, security, space and property management, procurement and contracting, information resources management activities, and financial management. The ASC's operate under the direction of a service center manager who reports to the Deputy Associate Director for Administration. The administrative service organizations and their service areas are:

Service Organizations	Region/Activity	Location
Office of the Deputy Associate Director for Administration	MMS Headquarters Atlantic OCS Region	Herndon, Virginia
Alaska Administrative Service Center	Alaska OCS Region	Anchorage, Alaska
Central Administrative Service Center	Royalty Management	Lakewood, Colorado
Administrative Satellite Office	Pacific OCS Region	Ventura County, California
Southern Administrative Service Center	Gulf of Mexico OCS Region/Royalty Management	New Orleans, Louisiana

SELECTED WORKLOAD OUTPUTS

The summary of selected workload outputs for the Administrative Service Centers are:

	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate	Inc.(+) Dec.(-)
Small Purchases Processed	4,425	4,654	4,854	+200
Contracts Awarded	98	135	142	+7
Contracts Administered	94	125	130	+5
Property Actions	17,984	13,000	16,150	+3,150
Property Inventoried	1,993	2,060	2,140	+80
Space Utilization Studies/Layouts	63	68	82	+14
Building Services/ Repairs/Complaints	3,009	3,175	3,375	+200
Telephone Connects/ Disconnects Processed	1,275	1,360	1,365	+5
Safety Inspections/Accident Investigations	76	59	60	+1
Security Clearances Processed	363	395	395	0
Positions Reviewed	798	510	535	+25
Vacancy Announcements Processed	184	180	170	-10
Training Courses Developed/Presented	18	13	13	0
Training Requests Processed & Reviewed	3,940	3,490	3,450	-40
Personnel Actions Processed	4,320	5,600	5,500	-100
Employee Relations Cases Processed/ Guidance Given	2,612	2,375	2,350	-25
BPA Calls Processed	1,048	1,025	1,125	+100
Invoices Processed	5,162	5,050	5,200	+150
Mail Processed	1,233,650	1,425,000	1,430,000	+5,000
Reproduction Work	4,921,672	5,300,000	5,300,000	0
Imprest Fund Actions	3,033	3,130	3,250	+120
Payroll/Personnel System Input	67,431	60,800	61,600	+800

Increase from 1991 base

	FY 1991 Base	FY 1991 Estimate	Difference
	(Dollar amounts in thousands)		
$	10,271	10,744	+473
(FTE)	(228)	(229)	(+1)

Centralized training (+$103,000, +1 FTE)

This initiative will centralize certain training activities and achieve program efficiencies by:

1. Procuring a contractor to provide Contracting Officer Technical Representative (COTR) training required by MMS, and Procurement Ethics Training as required by procurement regulations; and
2. Establishing an in-house training facility in the newly consolidated Northern Virginia headquarters location.

Funding of this initiative will be achieved by transferring resources from the OCS Lands and Royalty Management Programs to the Administrative Operations subactivity.

Recent concerns about procurement activities across the Government have led to the recognition that insufficient emphasis has been placed on training of Government employees in the management of contracts. The MMS requires 24 hours of training for COTR's. Unfortunately, at the present time, this training is somewhat random and subject to course availability and funding constraints. Furthermore, due to changing laws and regulations governing procurement activities, even employees who were trained previously are in need of new training. About 200-300 employees require training in procurement rules and regulations so that they may function effectively as COTR's. If training is obtained on an individual basis, costs can range from $350-$875 per course.

Additionally, procurement regulations establishes training requirements on procurement ethics for all officials involved in the procurement process. It is estimated that about 750 employees require appropriate ethics training classes.

The second element of this centralized training initiative is made possible by the recent consolidation of all Northern Virginia headquarters and regional components into one facility. This move has enabled MMS to establish its own in-house training facility. As a result, the Personnel Division can now offer in-house courses tailored specifically to the needs of employees rather than relying solely on more generalized courses provided by other entities. This flexibility in meeting training needs is expected to provide improved training for employees. A further benefit of this initiative is the expected cost efficiencies which will be achieved by directly contracting for training classes instead of obtaining training through other organizations on a reimbursable basis. To implement this initiative, one FTE and $79,000 are to be transferred from the OCS Lands Activity and $24,000 from Royalty Management Activity to this subactivity. OCS Lands Activity staff are expected to be the primary beneficiaries of this initiative.

Equipment modernization (+$370,000)

This increase would enhance productivity throughout the administrative organizations by providing funds for equipment modernization and upgrades.

Administrative Operations is a very salary-intensive subactivity. Pay raise absorptions have caused funds intended for periodic equipment replacement to be redirected to cover the unfunded pay increases. The administrative organization, thus, finds itself in a situation where equipment is wearing out and certain functions have not been able to utilize modern technology to develop and automate processes to enhance productivity (e.g., an SF-52 tracking system).

Distribution of change by object class

The object class detail for the proposed change is as follows:

	Amount ($000)
Personnel Compensation	+35
Personnel Benefits	+8
Other Services	+40
Equipment	+390
Total	+473

Justification of Program and Performance

Activity: General Administration
Subactivity: General Support Services

(Dollar amounts in thousands)

Subactivity		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc.(+) Dec.(-) from Base
General Support Services	$ (FTE)	17,104 ---	16,866 ---	18,051 ---	16,029 ---	-2,022 ---
Total Requirements	$ (FTE)	17,104 ---	16,866 ---	18,051 ---	16,029 ---	-2,022 ---

Impact of Public Law 99-177

(In thousands of dollars)

FY 1990 Enacted To Date	P.L. 99-177 B. A. Cancellation	FY 1990 Adjusted Appropriation
17,104	-238	16,866

Since General Support Services consists exclusively of fixed costs and support services, the cancellation of $238,000 must be distributed to program areas for absorption, thus further impacting MMS's ability to carry out its missions.

Authorization

Secretarial Order No. 3071	The order established the Minerals Management Service in January 1982, under authority provided by Section 2 of Reorganization Plan No. 3 of 1950 (64 Stat. 1262).

General Support Services

Objectives

- Provide adequate and safe work space and facilities that will contribute to the productivity and efficiency of the employees of the MMS in achieving goals and objectives.
- Provide appropriate services to support the operating programs.

Program Description

The General Support Services subactivity includes funding for fixed costs and related support services for all of the MMS. Fixed costs include expenses for rental of office space, Federal Telecommunications System (FTS) service, and postage, etc. Rent, which is estimated at $12.2 million in FY 1991, is the payment for all Federal building space rental and associated expenses for the normal 40 hour, 5-day workweek.

The FTS cost of $1.3 million is based on data developed by the Department and actual FY 1989 costs. Commercial communication expenses of $0.4 million are based on FY 1990 estimates and include maintenance and local and long distance telephone and telecommunications expenses for headquarters offices located in the Washington, D.C. area.

A summary of the expenses for General Support Services is shown below:

(In thousands of dollars)

Rent	12,211
Mail Services	420
Commercial Communications	400
Department of Interior Working Capital Fund and Miscellaneous Charges	724
Federal Telecommunications System	1,256
Reimbursable Services	346
Employees' Compensation Fund	233
Miscellaneous Costs	386
Unemployment Compensation	53
Total	16,029

Decrease from 1991 Base

(Dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
$	18,051	16,029	-2,022
(FTE)	(---)	(---)	(---)

Completion of Pacific OCS Regional Office Relocation (-$2,039,000)

A decrease of $2,039,000 is proposed due to the one-time expense related to the relocation of the Pacific OCS Regional office in Los Angeles, California, and the consolidation of the Ventura District office into a new single location in Ventura County, California.

Miscellaneous Services (-$54,000)

An additional decrease of $54,000 is possible due to the net reduction in miscellaneous costs such as courier services, operating building costs, and ZAP mail maintenance.

Take Pride in America (+$71,000)

The MMS is requesting $71,000 as its share of funding required to support the Department's Take Pride in America effort.

Take Pride in America is a national public awareness campaign designed to encourage wise use of the lands and resources shared by all Americans. Many Federal, State, local, and private sector organizations are involved in this program. The focus of the campaign is at the grassroots level. The campaign is not intended to be a vast Federal program, but rather to provide a unifying theme for thousands of local and individual activities. Through national public service announcements, public-private partnerships, a national awards program, and other activities, the campaign seeks to provide a boost for stewardship action and awareness efforts around the nation.

Distribution of change by object class

The object class detail for the proposed change is as follows:

	Amount ($000)
Personnel Benefits	-700
Travel and Transportation of Personnel	-106
Equipment	-125
Transportation of Things	-243
Other Services	-848
Total	-2,022

DEPARTMENT OF THE INTERIOR
Minerals Management Service
Leasing and Royalty Management
Program and Financing (In thousands of dollars)

14-1917-0-1-302	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate
Program by activities:			
DIRECT PROGRAM:			
00.0101 Outer Continental Shelf Lands......	90,682	90,157	100,651
00.0201 Royalty Management.................	52,201	54,255	61,519
00.0301 General Administration............	27,375	31,631	32,082
00.9101 Total direct program...........	170,258	176,043	194,252
01.0101 Reimbursable program..............	399	2,470	2,470
10.0001 Total obligations..............	170,657	178,513	196,722
FINANCING:			
Offsetting collections from:			
11.0001 Federal funds......................	-399	-1,270	-1,270
14.0001 Non-Federal sources................	---	-1,200	-1,200
21.4001 Unobligated Balance Available, Start of Year.......................	---	-1	--
24.4001 Unobligated Balance Available, End of Year.........................	1	---	--
25.0001 Unobligated balance lapsing........	486	---	--
39.0001 Budget Authority..................	170,745	176,042	194,252
40.0001 Budget authority (appropriation)...	170,745	178,525	194,252
40.0009 Reduction pursuant to P.L. 99-177..	---	-2,483	--
43.0001 Budget Authority, Net.............	170,745	176,042	194,252
Relation of obligations to outlays:			
71.0001 Obligations incurred, net..........	170,258	176,043	194,252
72.4001 Obligated balance, start of year..........................	74,802	68,794	68,874
74.4001 Obligated balance, end of year..........................	-68,794	-68,874	-72,358
77.0001 Adjustment in Expired Accounts.....	-813	---	---
90.0001 **OUTLAYS**.........................	**175,453**	**175,963**	**190,768**

Summary of Requirements by Object Class

Appropriation: Leasing and Royalty Management (Dollar amounts in Thousands)

Object Class	FY 1991 Base		FY 1991 Estimate		Difference	
	FTE	Amount	FTE	Amount	FTE	Amount
11. Personnel Compensation:						
11.1 Full-time permanent	1,966	74,341	2,009	75,767	43	1,426
11.3 Other than full-time permanent	100	2,180	100	2,180	---	---
11.5 Other personnel compensation	9	1,172	9	1,172	---	---
11.8 Special personal services payments	---	11	---	11	---	---
11.9 Total Personnel Compensation	2,075	77,704	2,118	79,130	43	1,426
12.1 Personnel benefits: civilian		17,200		16,842		-358
13.0 Benefits for former personnel		53		53		---
21.0 Travel and transportation of persons		4,426		4,854		428
22.0 Transportation of things		410		168		-242
23.1 Standard level user charges		11,085		11,085		---
23.2 Rental payments to others		90		123		33
23.3 Communications, utilities and miscellaneous charges		2,321		2,342		21
24.0 Printing & reproduction		1,100		1,115		15
25.0 Other services		60,663		72,887		12,224
26.0 Supplies and materials		2,206		2,278		72
31.0 Equipment		2,823		3,233		410
41.0 Grants, subsidies and contributions		200		136		-64
42.0 Insurance claims and indemnities		6		6		---
TOTAL Requirements		180,287		194,252	43	13,965

DEPARTMENT OF THE INTERIOR
Minerals Management Service
Leasing and Royalty Management
Object Classification (In thousands of dollars)

14-1917-0-1-302		FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate
Direct Obligations:				
	PERSONNEL COMPENSATION			
111.10	Full-time permanent	70,787	73,347	75,325
111.30	Other than full-time permanent	2,076	2,140	2,180
111.50	Other personnel compensation	1,133	1,178	1,172
111.80	Special personal services payments	10	10	11
111.90	Total personnel compensation	74,006	76,675	78,688
112.10	Civilian personnel benefits	14,990	16,382	16,732
113.00	Benefits for former personnel	94	53	53
121.00	Travel and transportation of persons	4,027	4,577	4,854
122.00	Transportation of things	408	410	168
123.10	Rental payments to GSA	8,894	10,571	11,085
123.20	Rental payments to others	114	90	123
123.30	Communications, utilities and miscellaneous charges	3,226	2,151	2,342
124.00	Printing and Reproduction	1,075	1,100	1,115
125.00	Other services	58,015	58,574	73,439
126.00	Supplies and materials	2,216	2,283	2,278
131.00	Equipment	2,979	2,972	3,233
141.00	Grants, subsidies, and contributions	213	199	136
142.00	Insurance claims and indemnities	1	6	6
199.00	**SUBTOTAL, direct obligations**	**170,258**	**176,043**	**194,252**
Reimbursable Obligations:				
211.10	Reimbursable, Full-Time Perm Pos	24	0	0
211.90	Reimbursable, Total Personnel Comp	24	0	0
212.10	Reimbursable, Personnel Benefits	3	0	0
225.00	Other services	372	2,470	2,470
299.00	**SUBTOTAL, reimbursable obligations**	**399**	**2,470**	**2,470**
999.90	**Total obligations**	**170,657**	**178,513**	**196,722**

DEPARTMENT OF THE INTERIOR
Minerals Management Service
Leasing and Royalty Management
Personnel Summary

14-1917-0-1-302	FY 1989 Estimate	FY 1990 Estimate	FY 1991 Estimate
Direct:			
Total number of full-time permanent positions	1,966	2,009	2,041
Total compensable workyears: Full-time equivalent employment	2,056	2,076	2,109
Full-time equivalent of overtime and holiday hours	10	10	9
Average ES salary	$76,394	$79,167	$82,038
Average GS grade	10.54	10.52	10.52
Average GS salary	$35,844	$37,134	$38,434
Average salary of ungraded positions	$10,640	$11,023	$11,409

DEPARTMENT OF INTERIOR
Minerals Management Service
Leasing and Royalty Management
Detail of Permanent Employment

14-1917-0-1-302	FY 1998 Actual	FY 1990 Estimate	FY 1991 Estimate
ES-6	2	2	2
ES-5	3	3	3
ES-4	9	9	9
ES-3	2	2	2
ES-2	1	1	1
ES-1	1	1	1
Subtotal	18	18	18
GS/GM-15	69	70	72
GS/GM-14	172	174	175
GS/GM-13	406	416	422
GS-12	461	466	472
GS-11	153	158	160
GS-10	43	42	41
GS-9	127	135	146
GS-8	37	36	36
GS-7	136	144	149
GS-6	131	133	134
GS-5	126	129	127
GS-4	76	75	75
GS-3	9	11	12
GS-2	0	0	0
GS-1	0	0	0
Subtotal	1,946	1,989	2,021
Ungraded	2	2	2
Total permanent employment, end of year	1,966	2,009	2,041

Appropriation Summary Statement

Minerals Management Service

Appropriation: Payments to States from Receipts under Mineral Leasing Act

Payments to States from Receipts under Mineral Leasing Act: (+$11,643,000)

In accordance with 30 U.S.C. 181 et seq. (the Mineral Leasing Act), all States (except Alaska) are paid 50 percent of the receipts from bonuses, royalties, and rentals resulting from the leasing of mineral resources under the Act, on public domain and certain acquired lands. Alaska is paid 90 percent of the receipts from such leasing.

The Federal Oil and Gas Royalty Management Act of 1982 (FOGRMA) required monthly, instead of semi-annual, payments to a State of its share of mineral leasing receipts from federal leases within the State (and of payor late payment interest collected under that Act on oil and gas royalties from public domain lands) and payments to Indian accounts of mineral leasing receipts from leases on Indian lands. Additionally, FOGRMA mandates the payment of late disbursement interest to States and Indians for those disbursements which do not meet the FOGRMA prescribed timeframes. This appropriation provides for monthly payments to all States for their share of revenues realized as a result of mineral leasing activities under the MLA on Federal lands within their boundaries.

Miscellaneous Payments (+$558,000)

-- Interest on Late Payments. An increase of $200,000 is requested to pay interest to States and Indian accounts when mineral leasing revenues are not disbursed by the dates prescribed in 30 U.S.C. 191 and 1714, as required under 30 U.S.C. 1721(b) and (d).

-- Interest on Refunds. An increase of $150,000 is requested to pay interest to royalty payors who successfully appeal royalty payment orders and are refunded all or part of the principal paid to and held by the Government.

-- Rewards. An increase of $200,000 is requested to reward persons who provide information to the Secretary of the Interior that results in the collection of additional mineral revenues owed to the Government.

-- Refunds. An increase of $8,000 is requested to pay certain one-time refund payments for successfully appealed bills due on Indian allottee leases.

Appropriation Language Sheet

PAYMENTS TO STATES FROM RECEIPTS UNDER MINERAL LEASING ACT

In fiscal year 1991, from amounts received from sales, bonuses, royalties, (including interest charges collected under the Federal Oil and Gas Royalty Management Act of 1982), and rentals of the public lands under the provisions of the Mineral Leasing Act of 1920, as amended, and the Geothermal Steam Act of 1970, as amended, which are not otherwise payable, for the following payments: (1) such amounts as may be necessary for interest owing to States, Indian Tribes, or Indian allottees in accordance with 30 U.S.C. 191, 1714, and 1721(b) and (d); (2) $8,000 for refunds of overpayments made by companies in connection with certain Indian leases in which the Director concurred with the claimed refund due; and (3) such amounts as may be necessary for payment of rewards to persons who provide information to the Government which results in the collection of additional mineral lease revenues owed to the Government in accordance with 30 U.S.C. 1723.

Further, during fiscal year 1991 and each fiscal year thereafter, from amounts received from sales, bonuses, royalties (including interest charges collected under the Federal Oil and Gas Royalty Management Act of 1982), and rentals of the public lands and the Outer Continental Shelf under the provisions of the Mineral Leasing Act of 1920, as amended, the Geothermal Steam Act of 1970, as amended, and the Outer Continental Shelf Lands Act of 1953, as amended, which are not payable to a State or to the Reclamation Fund, and notwithstanding section 10(a) of the Outer Continental Shelf Lands Act of 1953, such amounts as may be necessary shall be available for payment of interest on any refund of any amounts paid to the Secretary as royalty or any other payment made under or in connection with any lease or leasing law administered by the Secretary for exploration or development of oil, gas, coal, any other mineral, or geothermal steam, which are the subject of any administrative appeal or action for judicial review and which are determined not to be due or owing to the United States or any State, Indian Tribe, Indian allottee, Alaska native corporation (under any lease which the Secretary administers for such corporation) or any other recipient to whom any portion of mineral revenues is paid pursuant to applicable law. Interest shall be paid without regard to whether the amounts refunded were paid to the Secretary before or after the date of enactment of this Act, and shall be from the date of payment until the date of refund except that interest on refunded amounts paid to the Secretary before the date of enactment of this Act shall be paid only from the date of enactment of this Act until the date of refund, and at the rate equal to the rate determined by the Secretary of the Treasury for interest payments under section 12 of the Contract Disputes Act of 1978.

Justification of Proposed Language Changes

PAYMENTS TO STATES FROM RECEIPTS UNDER MINERAL LEASING ACT

1. "In fiscal year 1991 from amounts received from sales, bonuses, royalties, (including interest charges collected under the Federal Oil and Gas Royalty Management Act of 1982), and rentals of the public lands under the provisions of the Mineral Lands Leasing Act of 1920, as amended, and the Geothermal Steam Act of 1970, as amended, which are not otherwise payable, for the following payments: (1) such amounts as may be necessary for interest owing to States, Indian Tribes, or Indian allottees in accordance with 30 U.S.C. 191, 1714, and 1721(b) and (d);"

This is an annual provision which asks for an appropriation to pay authorized late disbursement interest to the States from undistributed mineral leasing receipts.

2. "(2) $8,000 for refunds of overpayments made by companies in connection with certain Indian leases in which the Director concurred with the claimed refund due;"

This provision would allow the MMS to make refunds from undistributed mineral leasing receipts on behalf of certain Indian allottees. The allottees do not have the monies to pay refunds to the companies, and as the monthly rents and royalties currently collected on the affected leases are either so small or nonexistent, recoupment from future royalty payments is not possible in a reasonable time. As a matter of fairness, the MMS asks for authority to reimburse the companies and for an appropriation to do so.

Past policy required the MMS to distribute BIA's portion of an appealed bill to BIA regional offices as soon as possible. New procedures allow the companies to post bonds for the disputed amounts and to have the MMS suspend the disputed payment. Only after the appeal is settled would the MMS distribute BIA's portion. Due to these new procedures, the need for these settlements should not recur for bills issued after 1987. However, settlements may be necessary for bills issued prior to 1987.

3. "(3) such amounts as may be necessary for payment of rewards to persons who provide information to the Government which results in the collection of additional mineral lease revenues owed to the Government in accordance with 30 U.S.C. 1723;"

This is an annual provision which requests an appropriation to pay FOGRMA authorized rewards from undistributed mineral leasing receipts.

4. "Further, during fiscal year 1991 and each fiscal year thereafter, from amounts received from sales, bonuses, royalties (including interest charges collected under the Federal Oil and Gas Royalty Management Act of 1982), and rentals of the public lands and the Outer Continental Shelf under the provisions of the Mineral Leasing Act of 1920, as amended, the Geothermal Steam Act of 1970, as amended, and the Outer Continental Shelf Lands Act of 1953, as amended, which are not payable to a State or to the Reclamation

Fund, and notwithstanding section 10(a) of the Outer Continental Shelf Lands Act of 1953, such amounts as may be necessary shall be available for payment of interest on any refunds of any amount paid to the Secretary as royalty or any other payment made under or in connection with any lease or leasing law administered by the Secretary for exploration or development of oil, gas, coal, any other mineral, or geothermal steam, which are the subject of any administrative appeal or action for judicial review and which are determined not to be due or owing to the United States or any State, Indian Tribe, Indian allottee, Alaska native corporation (under any lease which the Secretary administers for such corporation) or any other recipient to whom any portion of mineral revenues is paid pursuant to applicable law. Interest shall be paid without regard to whether the amounts refunded were paid to the Secretary before or after the date of enactment of the act, and shall be from the date of payment until the date of refund except that interest on refunded amounts paid to the Secretary before the date of enactment of this Act shall be paid only from the date of enactment of this Act until the date of refund, and at the rate equal to the rate determined by the Secretary of the Treasury for interest payments under section 12 of the Contract Disputes Act of 1978."

This provision would give the MMS permanent, indefinite authority to pay, from undistributed mineral leasing receipts, appropriate interest on all refunded payments for the period of time during which the disputed amount has been in the accounts of the Government, thus reflecting greater fairness and better business practice toward all royalty payors. Interest shall be paid without regard to whether the monies refunded were paid to the Secretary before or after the date of enactment of this Act.

Appropriation Language Citations

PAYMENTS TO STATES FROM RECEIPTS UNDER MINERAL LEASING ACT

1. "In fiscal year 1991, from amounts received from sales, bonuses, royalties, (including interest charges collected under the Federal Oil and Gas Royalty Management Act of 1982), and rentals of the public lands under the provisions of the Mineral Leasing Act of 1920, as amended,"

30 U.S.C. 181 *et seq*.

The Mineral Leasing Act, provides for the sharing of receipts with States from various mineral leasing activities on Federal public domain lands within their boundaries.

2. "and the Geothermal Steam Act of 1970, as amended,"

30 U.S.C. 1001 *et seq.*

The Geothermal Steam Act of 1970 authorizes the Secretary to issue leases for the development of geothermal energy and provides for receipt sharing with the States.

3. "which are not otherwise payable, for the following payments: (1) such amounts as may be necessary for interest owing to the States, Indian Tribes, or Indian allottees in accordance with 30 U.S.C. 191, and 1721(b) and (d);"

30 U.S.C. 1721(b) and (d)

The Federal Oil and Gas Royalty Management Act of 1982 provides for monthly payments to a State of its share of royalty funds from oil and gas production on Federal public domain lands within the State and to Indian accounts on production from leases on Indian lands, and for payments of interest to States and Indian accounts when funds are not disbursed as required by 30 U.S.C. 191 and 1714.

4. "(2) $8,000 for refunds of overpayments made by companies in connection with certain Indian leases in which the Director concurred with the claimed refund due;"

This provision is being proposed to allow MMS to refund companies amounts successfully appealed which are due from Indian allottees.

5. "(3) such amounts as may be necessary for payment of rewards to persons who provide information to the Government which results in the collection of additional mineral lease revenues owed to the Government in accordance with 30 U.S.C. 1723;"

30 U.S.C. 1723

The Federal Oil and Gas Royalty Management Act of 1982 authorizes payment of a reward of not more than 10 percent of recovered amounts when a person provides information to the Secretary of the Interior that results in the collection of additional mineral revenues owed to the Government.

6. "Further, during fiscal year 1991 and each fiscal year thereafter, from amounts received from sales, bonuses, royalties (including interest charges collected under the Federal Oil and Gas Royalty Management Act of 1982), and rentals of the public lands and the Outer Continental Shelf under the provisions of the Mineral Leasing Act of 1920, as amended, the Geothermal Steam Act of 1970, as amended, and the Outer Continental Shelf Lands Act of 1953, as amended, which are not payable to a State or to the Reclamation Fund, and notwithstanding section 10(a) of the Outer Continental Shelf Lands Act of 1953, such amounts as may be necessary shall be available for the payment of interest on any refund of any moneys paid to the Secretary as royalty or any other payment made under or in connection with any lease or leasing law administered by the Secretary for exploration or development of oil, gas, coal, any other mineral, or geothermal steam, which are the subject of any administrative appeal or action for judicial review and which are determined not to be due or owing to the United States or any State, Indian Tribe, Indian allottee, Alaska native corporation (under any lease which the Secretary administers for such corporation) or any other recipient to whom any portion of mineral revenues is paid pursuant to applicable law. Interest shall be paid without regard to whether the amounts refunded were paid to the Secretary before or after the date of enactment of this Act, and shall be from the date of payment until the date of refund except that interest on refunded amounts paid to the Secretary before the date of enactment of this Act shall be paid only from the date of enactment of this Act until the date of refund, and at the rate equal to the rate determined by the Secretary of the Treasury for interest payments under section 12 of the Contract Disputes Act of 1978."

This provision is being proposed to allow the MMS to pay appropriate interest on successfully appealed bills. This would reflect greater fairness and better business practice towards royalty payors.

Summary of Requirements

Appropriation: Payments to States from Receipts under Mineral Leasing Act

(Dollar amounts in thousands)

	FTE	Amount
Appropriation Enacted, 1990	---	471,043
Base Adjustments..............................	---	-----
1991 Base Budget..............................	---	471,043

Comparison by	FY 1989 Actual		FY 1990 Enacted to Date		PL 99-177 Reserve	FY 1990 Adj.Approp.		FY 1991 Base		FY 1991 Estimate		Inc(+)/Dec(-) From FY 1990 Enacted		Inc(+)/Dec(-) From FY 1990 Adj. Approp.		Inc(+)/Dec(-) From FY 1991 Base	
Activity/Subactivity	FTE	Amount	FTE	Amount	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Payments to States from Receipts under Mineral Leasing Act	---	432,363	---	471,043	-13,347	---	471,043 1/	---	471,043	---	482,686	---	+11,643	---	+11,643	---	+11,643
Miscellaneous Payments	---	---	---	---	---	---	---	---	---	---	558	---	+558	---	+558	---	+558
	---	432,363	---	471,043	-13,347	---	471,043	---	471,043	---	483,244	---	+12,201	---	+12,201	---	+12,201

1/ In accord with P.L. 99-177, as amended, this amount includes an obligation limitation at $457,696 and a resultant deferral of $13,347 which will remain in the account and be available for use in FY 1991, to the extent permitted by law. The FY 1990 and 1991 amounts are based on the receipt estimates used in the FY 1991 President's Budget.

Justification of Program and Performance

Activity: Payments to States from Receipts under Mineral Leasing Act

(Dollar amounts in thousands)

Activity		FY 1990 Enacted to Date	FY 1990 Adjusted Appropr'n	FY 1991 Base	FY 1991 Estimate	Inc.(+)/ Dec.(-) from Base
Payments to States	$ (FTE)	471,043 (---)	471,043 [1] (---)	471,043 (---)	482,686 (---)	+11,643 (---)

Impact of Public Law 99-177

(In thousands of dollars)

Activity	FY 1990 Enacted to Date	P.L. 99-177 Obligation Limitation	FY 1990 Adjusted Appropr'n
Payments to States	471,043	-13,347	471,043

In accord with P.L. 99-177, as amended, this amount includes an obligation limitation at $457,696 and a resultant deferral of $13,347 which will remain in the account and be available for use in FY 1991, to the extent permitted by law.

Authorizations

30 U.S.C. 181, et seq.	The Mineral Leasing Act, as amended by the Federal Oil and Gas Royalty Management Act of 1982 (see 30 U.S.C. 191, as amended) provides for the sharing of receipts with States on a monthly basis from various mineral leasing activities under that statute on Federal lands within their boundaries.
30 U.S.C. 351 et seq.	The Mineral Leasing Act for Acquired Lands as amended, provides for leasing coal, oil, oil shale, natural gas, phosphate, and sodium on acquired lands and the sharing of receipts in the same manner as other receipts from the

---

[1] In accord with P.L. 99-177, as amended, this amount includes an obligation limitation at $457,696 and a resultant deferral of $13,347 which will remain in the account and be available for use in FY 11991, to the extent permitted by current law.

	leased lands; receipts from such leasing on military acquired lands are shared with the State.
30 U.S.C. 1001, et seq.	The Geothermal Steam Act of 1970 authorizes the Secretary to issue leases for the development of geothermal energy and provides for receipt sharing with the States.
30 U.S.C. 191a	This law authorizes the sharing of all late payment interest collected on all Government lands and from all minerals categories. This law applies to all interest paid to the Government on or after July 1, 1988. Any interest the Government has improperly shared prior to July 1, 1988, shall not be recouped from any recipient.
30 U.S.C. 104(a), 30 U.S.C. 191, as amended	The Federal Oil and Gas Royalty Management Act of 1982 authorizes the monthly sharing with the States oil and gas royalties and all other charges collected from oil and gas leases located on public domain lands.

Objective

- Provide payments to the States on a monthly basis for their share of mineral leasing receipts and associated payor late payment interest from Federal lands within their boundaries which are subject to the Mineral Leasing Act distribution formula.

Base Program

This activity provides for payments to all States due shares of mineral leasing receipts and payor late payment interest realized as a result of the leasing of minerals on Federal lands located within the boundaries of the States. Revenues for these payments are accrued from bonuses, rentals, and royalties collected from Federal onshore mineral leases. The payment a State receives is based on the total revenues collected from mineral leasing and production within their boundaries.

The Mineral Leasing Act (MLA), 30 U.S.C. 181 et seq., provides that all States be paid 50 percent of the revenues from bonuses, royalties, and rentals resulting from the leasing of mineral resources on Federal public domain lands within their borders (except Alaska which receives 90 percent). The estimate of payments to each State for any future fiscal year is an allocation based on the projected total mineral leasing receipts during that year. The actual payments from the prior fiscal year are used to determine the estimated allocation by State.

In addition, FOGRMA authorized sharing with the States payor late payment interest accrued from oil and gas leases located on public domain lands.

30 U.S.C. 191a authorizes sharing with the States and all other recipients any interest on payor late payments accrued from all payments due on all Government lands, and from all minerals. Interest received by the Government on or after July 1, 1988, has been shared in the same manner as the rents, royalties, or bonuses with respect to which it is paid.

Distribution to the States

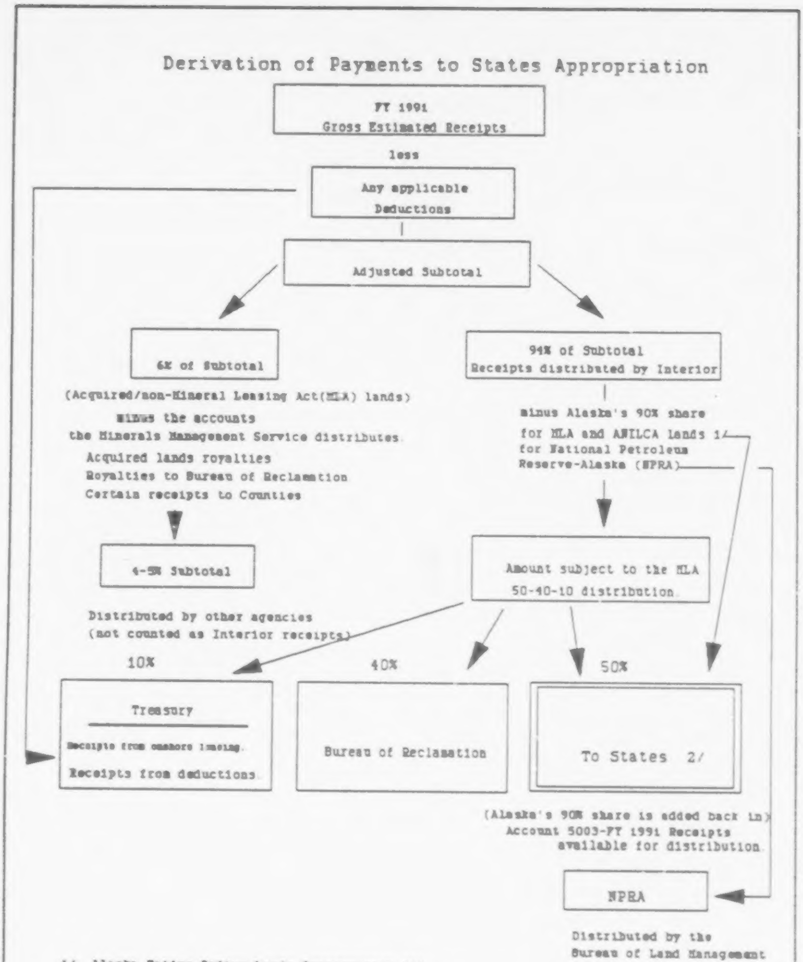
Figure 6 details the steps in this derivation process in flow chart form. Table 4 provides the amounts distributed or planned for distribution to the States during FY 1989-1991. The amount estimated for distribution to the States in FY 1991 increases from FY 1990 projected receipts due to an increase in the mineral leasing receipts as well as the inclusion of amount sequestered during FY 1990 under P.L. 99-177, as amended. The reader may find it useful to refer to Figure 6 and Table 4 while reading the following paragraphs.

An estimate of the total gross mineral collections is obtained from the various agencies which administer the onshore mineral leasing programs. Then any applicable deductions are made for legislative proposals to derive a subtotal of mineral leasing receipts. In the FY 1991 budget, no legislative proposals affect mineral leasing receipts.

From this subtotal (gross collections less applicable deductions), six percent is then deducted which represents the amount collected for non-MLA lands ($61 million) and is based on past actuals. For the most part, these monies are distributed by other Federal agencies. These collections are not considered Interior receipts, do not follow the Mineral Leasing Act distribution formula, and therefore are not in the Payments to States calculations.

The Payments to States estimate is derived from the remaining 94 percent of the mineral collections estimate. Its derivation may be tracked on the right hand side of the flow chart (Figure 6), or, if the reader prefers, Table 3 presents the same flow of events in dollar terms. Because of Alaska's unique revenue sharing arrangements, Alaska's estimated receipts are deducted prior to determination of amounts available for distribution to the Lower 48 States. After the Lower 48 States' 50 percent share is calculated, the amount to be distributed to Alaska for its 90 percent share of MLA collections is added to the Lower 48 total to arrive at the total amount to distribute through the Payments to States from Mineral Leasing Receipts activity account. Alaska's share of National Petroleum Reserve--Alaska (NPRA) receipts are not included in the Payments to States from Mineral Leasing Receipts activity account. They are distributed by the Bureau of Land Management through a separate account.

The estimate of the annual amount available for distribution to the States in a fiscal year must consider the approximately one month delay necessary for processing receipts collection and subsequent distribution. Receipts that are collected in September 1990 will be distributed in October 1990 (the following fiscal year). Thus, 11/12ths of budget year collections and 1/12th of current year collections are combined to equal the distribution amount in the budget year. The estimated distribution to each State is based on the percentage of total mineral leasing revenues historically generated within the boundaries of each State (Table 4).


Derivation of Payments to States Appropriation
FY 1991
Gross Estimated Receipts
less
Any applicable
Deductions
Adjusted Subtotal
6% of Subtotal
(Acquired/non-Mineral Leasing Act(MLA) lands)
minus the accounts
the Minerals Management Service distributes.
Acquired lands royalties
Royalties to Bureau of Reclamation
Certain receipts to Counties
4-5% Subtotal
Distributed by other agencies
(not counted as Interior receipts)
94% of Subtotal
Receipts distributed by Interior
minus Alaska's 90% share
for MLA and ANILCA lands 1/
for National Petroleum
Reserve-Alaska (NPRA)
Amount subject to the MLA
50-40-10 distribution.
10%
40%
50%
Treasury
Receipts from onshore leasing.
Receipts from deductions
Bureau of Reclamation
To States 2/
(Alaska's 90% share is added back in)
Account 5003-FY 1991 Receipts
available for distribution.
NPRA
Distributed by the
Bureau of Land Management

1/ Alaska Native Indian Lands Conservation Act

2/ There is approximately one month of processing time between receipt and distribution. The States' share is paid out through the PAYMENTS TO STATES appropriation.

Figure 6

Table 3

METHOD OF ESTIMATING THE FY 1991 PAYMENTS TO STATES FROM MINERAL RECEIPTS

(Dollar amounts in thousands)

	FY 1990		FY 1991	
Total Estimated Receipts	1,003,575		1,022,438	
Deduct: Any applicable proposals	---		---	
Total Receipts for Distribution	1,003,575		1,022,438	
Deduct: Other Distributions (6%)	60,215		61,346	
Available for Distribution to States (94% of receipts)	943,360		961,092	
Deduct: Alaska	7,010		7,170	
ANILCA 1/	1,598		1,438	
NPRA 2/	1,128		1,128	
Available to share with Lower 48 States	933,624		951,356	
Lower 48 States' 50% share	466,812		475,678	
add in Alaska's 90% share (includes ANILCA revenues)	7,747		7,747	
Receipts available for distribution to States	474,559		483,425	
Adjust for processing lag	X 1/12		X 11/12	
1 month of FY 1990 plus 11 months of FY 1991 equals	39,530	+	443,156	=

Payments to States from Mineral Leasing Receipts, SUBTOTAL...482,686
Amount deferred in FY 1990, in accord with
P.L. 99-277, as amended, now available for obligation:....... 13,347

TOTAL PAYMENTS TO STATES FROM MINERAL LEASING RECEIPTS.......496,033

1/ Receipts collected on lands controlled by the Alaskan Native Indian Land Conservation Act.

2/ The NPRA receipts are deposited to a separate account for distribution to the state of Alaska.

Table 4
FY 1991 PRESIDENT'S BUDGET
MINERAL REVENUE PAYMENTS
(Dollar amounts in thousands)

	FY 1989 Actual Payments	FY 1990 1/ Estimated Payments	FY 1991 2/ Estimated Payments
Alabama	221	234	254
Alaska	8,608	9,112	9,876
Arizona	240	254	275
Arkansas	7,775	8,231	8,920
California	24,397	25,826	27,990
Colorado	32,596	34,506	37,396
Florida	186	197	213
Idaho	1,930	2,043	2,214
Kansas	830	879	952
Louisiana	452	478	519
Michigan	668	707	766
Mississippi	74	78	85
Montana	19,944	21,113	22,881
Nebraska	115	122	132
Nevada	9,283	9,827	10,650
New Mexico	88,219	93,388	101,210
North Dakota	4,981	5,273	5,715
Ohio	5	5	6
Oklahoma	1,904	2,016	2,184
Oregon	289	306	332
South Dakota	669	708	768
Texas	5	5	6
Utah	53,027	56,134	60,836
Virginia	20	21	23
Washington	208	220	239
Wisconsin	0.5	1	1
Wyoming	175,716	186,013	201,593
Total Payments	432,363	457,696	496,033

1/ FY 1990 payments reflect obligation limitation of $457,696 as required by P.L. 99-177, as amended.

2/ FY 1991 payments relect obligation of $13,347, deferred in FY 1990 until FY 1991 as a result of P.L. 99-177, as amended. FY 1991 payments also reflect increase of $11,643 in mineral leasing receipts due to an increase i mineral leasing receipts, as well as planned revisions to the current coal product value regulations.

(By State numbers may not add due to rounding).

Increase from 1990 Base (+$11,643)

(Dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
$	471,043	482,686	+11,643
(FTE)	(---)	(---)	(---)

The increase in the Payments to States budget authority is due to an increase in estimated mineral leasing receipts ($11.6 million).

Detail of Changes from FY 1990

The following is a detailed explanation of the FY 1991 increase in Payments to States over the FY 1990 Payments to States.

Mineral Leasing Receipts

FY 1991 mineral leasing receipts increase from FY 1990's due to increasing oil and gas royalties, based on increasing oil (+1.6 percent) and gas (+4.9 percent) prices. This offsets a slight (oil -0.6 percent and gas -1.6 percent) estimated decline in production. The Lower 48 States' oil and gas rental and bonus payments are estimated to increase based on recent actuals.

Coal bonuses are also estimated to increase based on recent industry interest as well as on the pending decertification of the Powder River Basin (PRB) region which will allow for leasing by application. Coal production (+2 percent) and price (+1.6 percent) are estimated to increase from FY 1990. Additionally, the FY 1991 budget proposes to change the coal product valuations. Allowances for Black Lung, AML fees, and State Severance taxes will not be included. This increases the States' payments by $18.5 million. However, these increases cannot offset an estimated decrease in coal royalties because the FY 1990 estimate includes $87 million from coal lease readjustment cases expected to be resolved during that fiscal year.

The receipts shown include the one month processing delay between receipt collection and distribution for comparability with the Payments to States from Receipts under Mineral Leasing Act activity. These receipts do not include amounts transferred to other agencies.

Receipt Estimates based on the FY 1991 President's Budget
(Dollars in thousands)

Rents and Bonuses	FY 1990 Receipts	FY 1991 Receipts	Difference
Oil and Gas	125,048	134,055	9,007
Coal	5,700	14,379	8,679
Geothermal	3,325	3,434	109
Oil Shale	3	3	0
Other Minerals	825	904	79
	134,901	152,775	17,874
Royalties			
Oil and Gas	509,309	525,791	16,482
Coal	261,363	250,300	-11,063
Geothermal	19,366	19,909	543
Oil Shale	0	0	0
Other Minerals	19,511	18,961	-550
	809,549	814,962	5,412
TOTAL	944,450	967,736	23,286

States receive approximately 50 percent of mineral leasing receipts..+11,643

Distribution of change by object class

The object class detail for the proposed change is as follows:

	Amount ($000)
Grants, subsidies, and contributions............	+11,643

Justification of Program and Performance

Activity: Miscellaneous Payments

(Dollar amounts in thousands)

Activity: Miscellaneous Payments

Subactivity	FY 1990 Enacted to Date	FY 1990 Adjusted Appropr'n	FY 1991 Base	FY 1991 Estimate	Inc.(+)/ Dec.(-) from Base
Interest on Late Payments	---	---	---	+200	+200
Interest on Refunds	---	---	---	+150	+150
Rewards	---	---	---	+200	+200
Refunds	---	---	---	+8	+8
Total Requirement	---	---	---	+558	+558
(FTE)	(---)	(---)	(---)	(---)	(---)

Authorizations

30 U.S.C. 1714, 1721(b), 1721(d), 30 U.S.C. 191, as amended	The Federal Oil and Gas Royalty Management Act of 1982 provides for timely payments of royalty funds and from oil and gas production on Indian lands to Indian accounts and for payments of interest to States and Indian accounts when funds are not disbursed by the date required under 30 U.S.C. 191 and 1714.
30 U.S.C. 1723	This provision of the Federal Oil and Gas Royalty Management Act of 1982 provides for payment of rewards to persons who furnish information resulting in recovery of mineral lease revenues owed to the government of up to 10 percent of amounts collected.

Objectives

- o Provide interest to States and Indian accounts when mineral leasing revenues are not disbursed by the timeframes prescribed in 30 U.S.C. 191 and 1714.

- To assure an equitable payment of interest forgone is made to royalty payors who successfully appeal royalty payment orders and are refunded all or part of the principal paid to and held by the Government.
- To encourage receipt of information that results in the collection of additional mineral revenues owed to the Government.

Increase from FY 1990 Base (+558,000)

(Dollars in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
$	---	+558	+558
(FTE)	(---)	(---)	(---)

Indefinite amounts are requested for three different types of payments: (1) $200,000 to pay Interest on Late Payments, (2) $150,000 to pay Interest on Refunds, and (3) $200,000 to pay Rewards. A definite amount of $8,000 is requested for a refund type payment.

Interest on Late Payments (+$200,000)

The Federal Government shares with States revenues generated from most Federal mineral leasing activities within State boundaries. Indian lessors receive all the revenue from mineral leasing activities on their land. The Minerals Management Service collects, processes, accounts for, and audits, bonuses, rents, royalties, and interest due the Federal Government from mineral leasing activities and distributes shares to the Treasury, States, and various Indian accounts. Funding for this service is provided by three subactivities within the Royalty Management budget activity of the Leasing and Royalty Management appropriation--Mineral Revenue Collections, Mineral Revenue Compliance, and Systems Development and Operation.

The Payments to States from Mineral Leasing Receipts budget activity provides permanent, indefinite authority to pay the States their share of revenues. A portion of the Miscellaneous Payments activity is requested to provide funds to make payments of interest to States and Indian accounts when mineral leasing revenues due them are not disbursed within the timeframes prescribed by the Federal Oil and Gas Royalty Management Act of 1982 (FOGRMA).

The FOGRMA changed the distribution of payments to the States for their share of mineral leasing revenues from a semi-annual to a monthly schedule. For States, payments must be made by the last business day of the month in which receipts are warranted by the United States Treasury. In addition, FOGRMA provides that deposits of any royalty funds from oil or gas production on Indian lands will be made to the "appropriate Indian account" at the earliest practicable date, but in no case later than the last business day of the month in which such funds are received. Section 111 (b) and (d) of the Act provides that interest computed at a rate applicable under Section 6621 of the Internal Revenue Code of 1954 is owed if the payment schedules listed above are not met.

However, receipts cannot be disbursed to State accounts until a proper determination can be made of the source of all incoming royalties. For example, an error which prevents a royalty accounting line item from processing through the system may occur, which will result in interest liability. Thus, in this instance, MMS has the cash available, but cannot determine to whom the cash belongs until the error is corrected.

In contrast to money due the States, Indian lease revenues are deposited in the Treasury the same day they are received and transferred to the Bureau of Indian Affairs (BIA) as soon as practicable (normally within 2 working days). MMS has undertaken several initiatives to reduce errors and keep interest owed on late disbursements to a minimum. These efforts have resulted in late interest payments being reduced from $1.16 million in FY 1985 to approximately $200,000 in the past two years. FY 1989 payments were $213,372. Late disbursement interest payments for FY 1991 are estimated at $200,000 once again.

Interest on Refunds (+$150,000)

Some royalty payors who contest a particular assessment or royalty payment obligation pay the disputed amounts to MMS pending administrative appeal or judicial review. In some cases, all or some portion of the amount paid is ultimately determined to be not owing to the United States, an Indian account, or an Alaska Native Corporation.

The MMS believes it is appropriate to pay interest on the amount refunded for the period from payment until refund, thus reflecting greater fairness and better business practice toward the royalty payors. The interest rate provided is one which corresponds closely to the time value of the funds; it is not a punitive interest rate. Interest on refunds for FY 1991 is estimated to be $150,000. This is the first year of this permanent request, therefore, it is now included under current authority rather than under permanent authority per OMB Circular A-11.

Rewards (+$200,000)

The MMS is authorized by Section 113 of the Federal Oil and Gas Royalty Management Act of 1982 to pay a reward of not more than 10 percent of recovered amounts when a person provides information to the Secretary of the Interior that results in the collection of additional mineral revenues owed to the Government. Regulations to implement the reward program were published in the Federal Register in July 1987. The reward percentage will be dependent upon the amount and usefulness of the information provided. The regulations provide a formula similar to that used by the IRS to determine what percentage of the collected amount individuals will receive. These rewards do not apply to information obtained from Federal Government employees, an officer or employee of a State or Indian tribe acting pursuant to a cooperative agreement or delegation under this Act, or any person acting pursuant to a contract authorized by FOGRMA.

This reward program will enhance current royalty collection efforts and lead to increased royalty collections. In FY 1991, $200,000 is estimated to be needed for reward payments.

Refunds (+$8,000)

Refund payments estimated for FY 1991 for Indian lease cases total approximately $8,000. The Indian allottees are not able to make refunds and due to the current royalty revenue on the leases being either so small or non-existent, recoupment from lease royalty payment is not possible or would require an unduly long period of time.

Past policy required a payor who appealed a bill to pay the bill pending the outcome of the appeal. Additionally, the policy required the MMS to distribute BIA's portion of an appealed bill to BIA regional offices as soon as possible so they could subsequently disburse the revenues to the individual Indian royalty owners. In cases where the payor's appeal was upheld and the moneys were not available to repay the company, recoupment was made against future royalty payments. To mitigate these situations, in 1987, the BIA changed its policy and the MMS implemented new procedures. These new procedures allow the companies to post bonds for the disputed amounts and to have the MMS suspend the disputed payment. Only after the appeal is settled would the MMS distribute BIA's portion. These procedures insure that the distribution is not made until after the appeal is resolved. However, the need may arise for settlements of pre-1987 bills as it has in these cases, with refunds being required.

Distribution of change by object class

The object class detail for the proposed change is as follows:

	Amount ($000)
Other Services	+200
Refunds	+158
Grants, subsidies, and contributions	+200
	+558

DEPARTMENT OF THE INTERIOR
MINERALS MANAGEMENT SERVICE
PAYMENTS TO STATES FROM RECEIPTS UNDER MINERAL LEASING ACT

Program and Financing
(In thousands of dollars)

14-5003-0-2-806	FY 1989 Actual	FY 1990 Enacted	FY 1991 Estimate
Program by activities:			
Direct Program:			
00.01 Payments to States..................	432,363	457,696	496,033
00.02 Miscellaneous Payments..............	---	---	558
10.00 Total obligations....................	432,363	457,696	496,591
Financing:			
21.00 Unobligated balance available, start of year.....................	---	---	-13,347
24.00 Unobligated balance available, end of year.......................	---	13,347	---
39.00 Budget authority.....................	432,363	471,043	483,244
Budget authority:			
40.00 Appropriation........................	---	---	558
60.00 Appropriation........................	432,363	471,043	482,686
Relation of obligations to outlays:			
71.00 Obligations incurred, net...........	432,363	457,696	496,591
90.00 OUTLAYS...........................	432,363	457,696	496,591

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUDGET JUSTIFICATIONS, F.Y. 1991

March 3, 1849

BUREAU OF MINES

NOTICE: These budget justifications are prepared for the Interior and Related Agencies Appropriations Subcommittees. Approval for release of the justifications prior to their printing in the public record of the Subcommittee hearings may be obtained through the Office of Budget of the Department of the Interior.

DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

Fiscal Year 1991 Budget Justification

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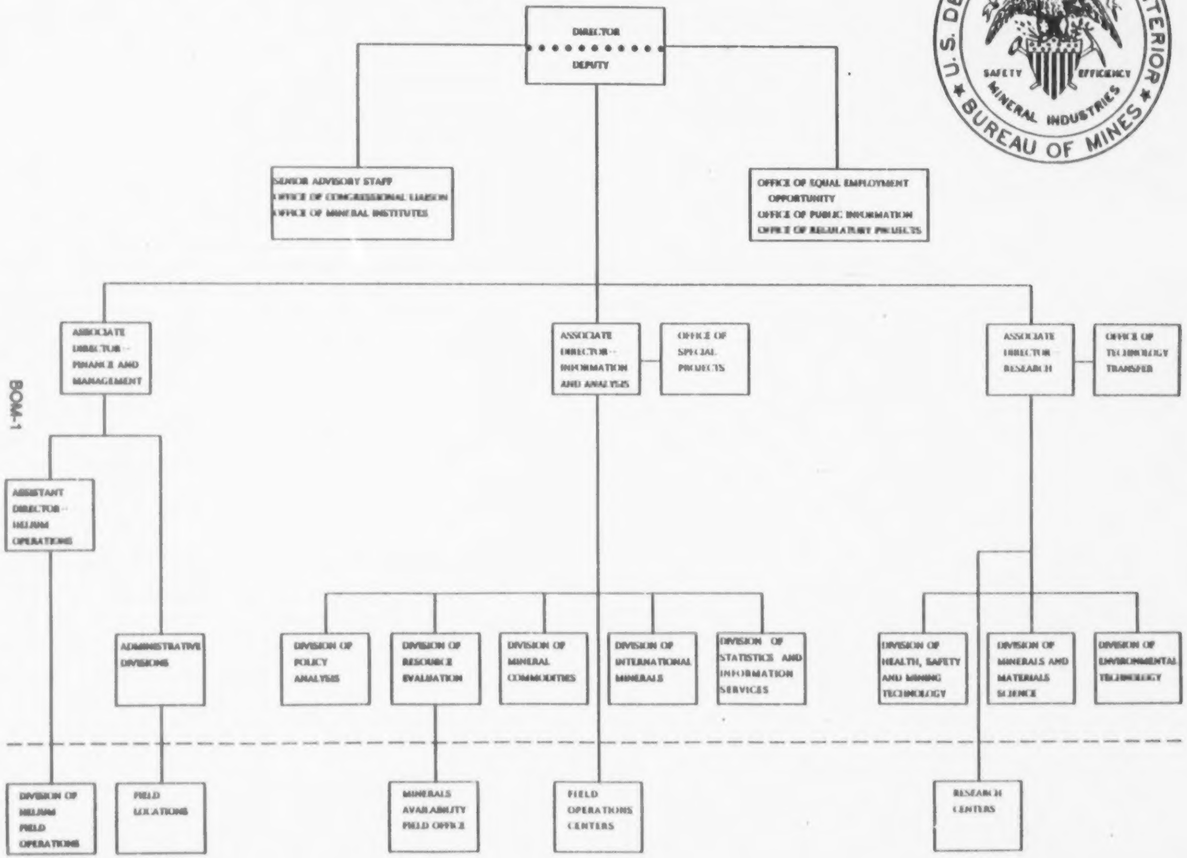
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES


DIRECTOR
DEPUTY
SENIOR ADVISORY STAFF
OFFICE OF CONGRESSIONAL LIAISON
OFFICE OF MINERAL INSTITUTES
OFFICE OF EQUAL EMPLOYMENT OPPORTUNITY
OFFICE OF PUBLIC INFORMATION
OFFICE OF REGULATORY PROJECTS
ASSOCIATE DIRECTOR-- FINANCE AND MANAGEMENT
ASSOCIATE DIRECTOR-- INFORMATION AND ANALYSIS
OFFICE OF SPECIAL PROJECTS
ASSOCIATE DIRECTOR-- RESEARCH
OFFICE OF TECHNOLOGY TRANSFER
ASSISTANT DIRECTOR-- HELIUM OPERATIONS
ADMINISTRATIVE DIVISIONS
DIVISION OF POLICY ANALYSIS
DIVISION OF RESOURCE EVALUATION
DIVISION OF MINERAL COMMODITIES
DIVISION OF INTERNATIONAL MINERALS
DIVISION OF STATISTICS AND INFORMATION SERVICES
DIVISION OF HEALTH, SAFETY AND MINING TECHNOLOGY
DIVISION OF MINERALS AND MATERIALS SCIENCE
DIVISION OF ENVIRONMENTAL TECHNOLOGY
DIVISION OF HELIUM FIELD OPERATIONS
FIELD LOCATIONS
MINERALS AVAILABILITY FIELD OFFICE
FIELD OPERATIONS CENTERS
RESEARCH CENTERS

BOM-1

GENERAL STATEMENT

The Bureau of Mines was created in 1910 (30 U.S.C. 1-11). Its mission is to help ensure that the United States has an adequate and dependable supply of minerals to meet its defense and economic needs at acceptable environmental, energy, and economic costs. It undertakes that mission by acquiring and analyzing worldwide minerals data, by conducting research to enhance the safety and efficiency of mining and mineral processing, and by conducting impact analyses to determine the effect of proposed regulations on the Nation's mineral industry and supplies.

The Bureau's mission has been statutorily enlarged in such areas as health and safety technology (30 U.S.C. 951(a) and 30 U.S.C. 861(b)); conservation of the Nation's helium resources (50 U.S.C. 167); research on the development, mining, preparation, treatment, and utilization of minerals essential to the common defense or the industrial needs of the United States (50 U.S.C. 98g(a)(1)); and mineral land assessments (16 U.S.C. 1133(d)(2), 16 U.S.C. 3150(a), and 43 U.S.C. 1782(a)). The Mining and Minerals Policy Act of 1970 (30 U.S.C. 21(a)) and the National Materials and Minerals Policy, Research and Development Act of 1980 (30 U.S.C. 1602, 1603) reaffirmed the Bureau's role in assessment of international mineral supplies; mining and metallurgical research for strategic and critical minerals; research on methods for the disposal, control, and reclamation of mineral wastes, recycling of scrap, and the reclamation of mined land, so as to lessen any adverse impact of mineral extraction and processing upon the environment and conserve mineral resources, and analysis of mineral data to support decisions concerning the use of Federal lands. In 1988, the Bureau was given management responsibility for the Mineral Institute Program by P.L. 100-483. The Bureau also provides the nucleus of the Emergency Minerals Administration, which is chartered under the Defense Production Act of 1950, as amended, (50 U.S.C. 2062), and supports the Department of Defense in its stockpiling and other materials readiness programs.

Comparison of 1991 estimate with the 1990 enacted level:

(Dollar Amounts in Thousands)

Appropriation Requested		FY 1990 Enacted To Date	FY 1990 Adjusted Approp	FY 1991 Estimate	Inc.(+) or Dec.(-) from Enacted	Permanent Employment 12/31/89
Mines and Minerals	$	174,759	172,443	145,712	-29,047	
	(FTE-T)	(2,086)	(2,086)	(1,972)	(-114)	1,951
Contributed Funds	$	700	700	700	---	
	(FTE-T)	(9)	(9)	(9)	(---)	8
Miscellaneous Accounts 1/	$	---	---	---		
	(FTE-T)	(247)	(247)	(247)	(---)	247
Total, Bureau of Mines	$	175,459	173,143	146,412	-29,047	
	(FTE-T)	(2,342)	(2,342)	(2,228)	(-114)	2,206

1/ Miscellaneous accounts include the Helium Fund and reimbursements from other Federal agencies.

FY 1991 BUREAU OF MINES DIRECTION

The Bureau's FY 1991 budget responds to Presidential/Secretarial initiatives on education, volunteerism, and women and minorities; as well as Bureau initiatives to modernize and upgrade the capabilities of the Bureau's mineral information and analysis program; expand mineral land assessment activities; address the impact of regulations on mineral industries; and address the needs for training and research in the Nation's universities; while continuing to enhance mine worker health and safety; reduce pollution and clean up the environmental impact of mining and mineral processing operations, and enhance the accessibility and conservation of domestic mineral resources.

Specifically, the fiscal year 1991 budget supports commitments to:

- o modernize the collection, analysis, and dissemination of information about minerals and materials.
- o advise regulatory agencies about excessively burdensome or unnecessary regulations that seriously impact the domestic minerals industry.
- o reduce pollution and clean up the Nation's contaminated waters and lands.

We used a grass-roots approach within the Bureau to identify the efforts that we plan to emphasize. We examined detailed project estimates and sought advice and recommendations from such prestigious professional groups as the National Academy of Sciences, American Institute of Mining and Metallurgical Engineers, Mining and Metallurgy Society of America, and the Advisory Committee on Mining and Mineral Resources Research. As a result, in addition to the base programs, we are proposing new initiatives involving stewardship, upgrading the information and analysis function, mineral land assessment, regulatory issues, and the mineral institute program.

The Bureau's research efforts will continue to provide the scientific knowledge needed to show the feasibility of innovative approaches and lay the groundwork for the development of specific applications by private industry. The Bureau's research budget request is $73,722,000, more than half of our total request, and represents an increase of $1,387,000 above the amount included in the FY 1990 President's budget. The request includes increases in human factors research in the Health, Safety and Mining Technology program and in the Environmental Technology program when compared to that base. During FY 1991, Health, Safety and Mining Technology research will focus on the risks related to new or novel extraction technologies; haulage and transportation at surface operations; and respirable dust, noise, mountain bumps, ventilation requirements, fires and explosions, and maintaining escapeways during emergencies in underground coal mines. Environmental Technology research will emphasize biological techniques, such as constructed wetlands, to control acid mine drainage; subsidence; abandoned mined land reclamation; and solution of hazardous waste problems associated with hard rock mining, minerals processing and recycling, including cyanide contamination and techniques for dealing with Superfund sites. Minerals and Materials Science research will stress technologies for extracting and recycling strategic and critical minerals and technologies related to advanced materials.

These proposals support the President's programs, the immediate and long term needs of the American mineral industry, and the general economic growth and well-being of the Nation.

Fixed Costs

In FY 1989, the Bureau was appropriated what was expected to be a one-time cost of $3.0 million to pay for a Superfund-related settlement negotiated with the Robinson Brick Company (ROBCO) of Denver, Colorado. The funds were needed to reimburse the Environmental Protection Agency (EPA) for cleaning up radioactive wastes generated over 70 years ago by the National Radium Institute (a private organization) on the ROBCO property. The ROBCO property is part of the larger Denver Radium Superfund Site. As EPA worked to clean up the property, it found much larger quantities of contaminated material than had originally been estimated. This discovery drove up EPA's estimated costs (not including final disposal of the contaminated materials) to $13.5 million. The Bureau, therefore, requested an increase of $7.5 million in the FY 1990 budget above the base of $3 million, so that it could continue to honor its commitment to provide funding for this effort. During FY 1989, EPA awarded a contract for final disposal of contaminated materials from all Denver Radium Site locations, including the ROBCO property. In FY 1990, the Congress appropriated $8.5 million for this purpose, of which $113,000 was sequestered pursuant to P.L. 99-177.

Since the Bureau's share of the cleanup costs has not been finally determined, the Administration has decided not to make a request for additional funding for this purpose in FY 1991, but to wait until the final cost is determined before requesting appropriations to reimburse the Superfund. It is anticipated that the final cost will be know in FY 1993; therefore, $14.0 million is included in the FY 1993 outyear projections. This funding arrangement will not affect the pace of the cleanup efforts.

The Bureau expects to relocate its headquarters from Columbia Plaza to another location during FY 1991. The Bureau must buy systems furniture that will accommodate its staff in a smaller amount of space, and lease both the current space and the new space while the move is being completed. We estimate a one-time requirement of $2.9 million for these purposes. An additional $2.4 million is also estimated for additional rental payments to the General Services Administration. The Bureau will also experience additional costs in FY 1991 for such items as workers compensation, FERS, an additional workday in 1991, and for various departmental programs in which we participate.

Reductions related to the FY 1990 downsizing of the Bureau's automatic data processing facilities will partially offset these increased costs. We will also reduce a number of costs such as consultants, travel, overtime, supplies, and equipment. Other savings will be achieved by filling vacancies at lower grades and by delays in hiring to fill vacancies. These reductions total $4.1 million. For details, see "Justification of Base Adjustments", page BOM-17.

Although the Congress prohibited the sale of the Bureau's Helium program assets in FY 1990, the FY 1991 Budget assumes that steps leading to the phasing out of the Helium Operations will begin during fiscal year 1991, as part of the Administration's effort to shift government services to private providers. The goals of the Federal Helium program--conservation of helium to meet government needs and promotion of a viable private helium industry--have both been met. Therefore, the Administration has concluded that it is time for the government to relinquish its role as the sole provider of helium to Federal agencies. Options for implementing the sale of the Helium program assets and for price increases are being reviewed.

Funds Transferred From the Department of Defense

On December 5, 1989, the Department of Defense transferred $6,000,000 appropriated in FY 1989 under the heading "Defense Production Act Purchases" (102 Stat. 2270-12, Public Law 100-463) to the Bureau of Mines pursuant to P.L. 101-165, H.R. 3072-13, "for a demonstration project to develop a reliable source of titanium ore from ilmenite . . . known as the Soledad Canyon Demonstration Project in Los Angeles County, California." These funds will be available for obligation through September 30, 1993. The Bureau of Mines is developing a program plan for the use of these funds.

BUREAU OF MINES

FY 1991 BUDGET

The FY 1991 budget includes five proposed initiatives:

- Stewardship
- Information Function Upgrade
- Mineral Land Assessments
- Regulatory Issues
- Mineral Institutes

Of these, the Mineral Land Assessments and Regulatory Issues initiatives are continuations and expansions of our earlier initiatives with the same titles. The FY 1990 Alaskan Strategic and Critical Minerals initiative is an integral part of the Mineral Land Assessments initiative proposed for this year. While we are no longer highlighting work on Advanced Materials, Innovative Mining and Processing Technology, or Robotics and Automation, the work included in these initiatives has been incorporated into the Bureau's ongoing base program at what we believe is an appropriate level of effort. We do not believe that these areas are any less important; however, we believe that other areas presently are of a higher priority.

STEWARDSHIP

The Bureau's work in support of the Secretary's departmentwide emphasis on stewardship of the Nation's resources focuses on: Excellence in Education; Women and Minorities; and Take Pride in America.

Excellence in Education. Interior supports the President's goal of raising the standard of education in America. In addition to Indian education programs, the Department has a variety of non-Indian education initiatives that include activities in support of elementary, secondary and post-secondary school programs as well as programs for the general public regarding the Nation's natural resources. For the Bureau of Mines an increase of $500,000 over the base is being proposed for the excellence in education effort. The types of activities carried out by the Bureau of Mines include the following:

The Bureau will oversee the development of a minerals education curriculum for elementary schools. The curriculum would help students (1) discover the nature of mineral resources and their importance in the origin and development of society, (2) become aware of the role the mineral resource sector of the economy plays in providing for our advanced technology, and (3) develop an appreciation and concern for the development and conservation of these nonrenewable natural resources. The curriculum would be designed in conjunction with a volunteer panel of mineral experts and educators.

Women and Minorities. Interior's goal is to involve women and minorities as employees, especially at management levels, and program participants in an effort to reach beyond minimum equal opportunity requirements. Interior bureaus are continually seeking ways to enhance recruitment, training and advancement within the Department of women and minorities, particularly in such critical professional areas as engineering, science, accounting and computer programming. For the Bureau of Mines an increase of $300,000 over the base is being proposed for the women and minorities effort. The types of activities carried out by the Bureau of Mines include the following:

- The Bureau of Mines would establish a direct employment program patterned on the U.S. Geological Survey's (U.S.G.S.) Minority Participation in the Earth Sciences Program, and would embrace and expand upon the U.S.G.S. model program to provide opportunities to minority and women students at secondary levels and above to work with professionals in mineral resource sciences and management on real problems to build their interest in mineral resource careers.

- The Bureau would also develop new career education materials targeted for women, minorities, and the physically challenged. The Bureau already has a library of videotapes in wide circulation in the

Nation's schools. The Bureau would produce an educational videotape and supporting written materials specifically targeted for women and minorities that would highlight employment opportunities in the mineral industries. The materials would include information on the coursework needed for pursuing careers in the mineral industries.

- o The proposed curriculum for elementary schools discussed above will also seek to stress the contributions of women and minorities to the role of the mineral resource industry in shaping political, economic, and sociological events. It will also highlight opportunities for women and minorities in meeting the Nation's need for minerals and the products made from them.

Take Pride in America. The Department encourages volunteer stewardship in a variety of ways, including the national Take Pride in America campaign. Take Pride reaches out to millions of Americans through its national awards program, grassroots activities, and public service announcements. The campaign's message is simple: America's natural resources belong to all of us, and we have a responsibility to leave them in better condition for future generations. For the Bureau of Mines, an increase of $100,000 over the base is proposed to continue and expand its active support of this initiative.

INFORMATION FUNCTION UPGRADE

The Bureau of Mines is the principal Federal agency responsible for collecting and disseminating mineral information. The Bureau collects information in the United States and throughout the world. The Bureau assesses the worldwide availability of minerals, giving highest priority to deposits in countries friendly toward the United States. It analyzes the impact that government policies, economic conditions, and political events have on the mineral sector of the economy and the Nation's mineral supplies.

To meet the evolving needs of its constituents for not just timely but instantaneous data and to correct a number of accumulated problems, the Bureau of Mines proposes to significantly enhance and automate its ability to perform this central mission--gathering, analyzing and distributing information about minerals. This effort includes establishing a new centralized statistical function, augmenting data and information collection capabilities, redesigning and broadening its periodic publications, and developing an efficient supporting infrastructure.

After reviewing the practices and procedures used by several other Federal agencies that collect data, the Bureau upgraded its statistical function by establishing a statistics division during FY 1990. The new organization is introducing modernized survey techniques, upgrading statistical standards, improving processing and timeliness, and upgrading the quality of the Bureau's statistical publications. These improvements are in accord with earlier recommendations made by the National Research Council.

Upgrading the Bureau's data processing capabilities demands significant improvements in the accessibility and utility of the Bureau's two major mineral information data bases. One data base--the Automated Mineral Information System (AMIS)--includes data on mineral production, consumption, capacities, and related information. The second--the Minerals Availability System (MAS)--contains data on worldwide deposits, mines, and mineral processing facilities. The Bureau will convert these two separate systems to a relational data base management system and replace higher priced mainframe services with new minicomputers. These improvements will be achieved at costs similar to or less than current expenditures. They will allow the Bureau to make flexible low-cost adjustments as technology changes during the 1990's and facilitate the delivery of more timely and appropriate data to users.

The second major thrust of this initiative will be to develop new data and information systems. A new data base for advanced materials will be added to existing data systems to support future analysis and information activities, as well as Bureau research into advanced materials. The Bureau will collect and publish information about both domestic and international developments. To permit comparative analysis of mineral resources on public lands and current land-use constraints, the Bureau will install a new geographic information system with mapping and analytical capabilities. The system will allow users to retrieve, analyze, overlay and display data on Federal lands .

The third major thrust of this initiative concerns the modernization of the Bureau's mineral information publications to improve their readability, appearance and timeliness. Recent user surveys have indicated that users want more timely Bureau publications. Modern techniques for gathering, processing and disseminating information (including telephonic, facsimile machine, and other electronic survey methods, desktop publishing, and electronic bulletin boards) will help the Bureau meet this goal.

A program increase of $3 million is requested for these efforts.

MINERAL LAND ASSESSMENTS

The U.S. Geological Survey (USGS) and the Bureau of Mines (BOM) are responsible for assessing the mineral resources of the United States and investigating their economic development potential. It is government policy to periodically and systematically inventory public lands and their resources, and to project their present and future use through a land-use planning process.

Alaska has the highest potential for undiscovered strategic and critical mineral deposits in North America. The Alaska Strategic and Critical Minerals Initiative will locate and assess the resource development potential of strategic and critical minerals in Alaska, and develop the information needed to stimulate the private sector to initiate activity leading to production. The initiative will provide timely, comprehensive mineral data required by Federal and State agencies to make well-informed economic and policy decisions, and encourage industry involvement in the exploration for and development of strategic and critical minerals in Alaska. The initiative will also provide data for mine feasibility, including mineral characterization and beneficiation studies, and it will include developing exploration models and identifying target areas for economic deposits.

A program increase of $800,000 is requested for these efforts.

REGULATORY ISSUES

Regulatory compliance costs affecting the U.S. mineral industry are expected to increase in the early 1990s. Such increases may further erode the ability of domestic firms to compete with foreign producers who are not subject to similar government controls.

The extensive minerals experience and expertise of the Bureau of Mines allows it to make a unique and valuable contribution to the regulatory decisionmaking process. The Bureau's Information and Analysis Directorate conducts timely analyses to inform Federal and State authorities about the impacts of regulatory alternatives, and to encourage the selection of health, safety, and environmental protection options that meet regulatory goals without imposing unnecessary economic burdens on the mineral industry. Emphasis is placed on identifying policies that utilize market incentives.

Specific efforts proposed under this initiative for FY 1991 include analyses of secondary recovery and waste disposal options and analyses of waste problems with advanced materials.

A program increase of $200,000 is requested for these efforts.

MINERAL INSTITUTES

Since establishment of the Mineral Institute program in 1977, thirty two colleges and universities have been designated as Mineral Institutes on the basis of their expertise in mineral sciences and engineering disciplines. These centers of academic research expertise in minerals have each received Federal support of annual allotment grants of the same amount to each institution. In addition to allotment grants, research grants are also awarded to the designated mineral institutes on a competitive basis in the generic areas of mine systems design and ground control, pyrometallurgy, comminution, mineral industry waste treatment and recovery, and marine minerals technology. Grants funded through the Health, Safety and Mining Technology program have also been awarded in the generic area of respirable dust. One academic institution is designated as the lead institution for a given generic area forming the nucleus of a generic minerals technology center. All 32 mineral institutes are eligible to propose research projects in any generic area. Project selection is made by an independent research council consisting of industry, government, and academic experts in the particular generic area.

This initiative also furthers the Secretary of the Interior's interest in supporting education, and supports a Presidential MBO in this area, since the Mineral Institutes collectively represent the Nation's best sources of future professional talent in the minerals field.

Proposed funding for the Mineral Institute program consists of $4,000,000 for research grants, to be awarded competitively, and $250,000 to cover the Bureau's administrative expenses.

APPROPRIATION SUMMARY STATEMENT

BUREAU OF MINES

Appropriation: Mines and Minerals

Information and Analysis. This program provides a reliable data base for analysis of national minerals problems by collecting, interpreting, and disseminating worldwide information relating to the production, consumption, and availability of nonfuel minerals. The program maintains information on the production and consumption of approximately 100 mineral commodities, and also on the minerals-related industries of about 168 countries. In-depth economic, technical, and policy studies that address the worldwide supply and demand for nonfuel minerals are conducted in this program. The Minerals Availability System, a computerized data base system, develops and utilizes methodologies for evaluation of mineral deposits based on quantifiable technical, economic, and social data. The program also includes mineral land assessments on certain Bureau of Land Management and U.S. Forest Service lands, carried out jointly with the U.S. Geological Survey.

Research.

Health, Safety and Mining Technology. This program focuses on long-term, high risk research designed to improve all aspects of the health and safety of miners, including prevention of occupational illnesses, accidents, and disasters, as well as innovations that will make the U.S. mining industry more competitive in the world market. Research is being concentrated on new concepts that promise revolutionary improvements in health and safety, reduced environmental impacts, increased access to marginal mineral deposits, increasing the domestic mineral reserve base, and expansion of efforts in automation, robotics, and innovative mining systems.

Minerals and Materials Science. Research is conducted to develop basic information on fundamental scientific and engineering principles of minerals processing that will support and enhance the mineral industry's efforts to investigate new or alternative techniques which increase production of strategic, critical, and other essential minerals.

Environmental Technology. Research is conducted to mitigate or eliminate adverse environmental impacts associated with mining and mineral processing. Problems addressed include subsidence, acid mine drainage, and neutralization of toxic waste materials.

Mineral Institutes. Minerals research and engineering programs conducted at 32 colleges and universities nationwide are supported through public and private resources.

General Administration. The program supports executive direction, and financial and management services for the Bureau of Mines.

APPROPRIATION LANGUAGE SHEET

MINES AND MINERALS

For expenses necessary for conducting inquiries, technological investigations, and research concerning the extraction, processing, use, and disposal of mineral substances without objectionable social and environmental costs; to foster and encourage private enterprise in the development of mineral resources and the prevention of waste in the mining, minerals, metal, and mineral reclamation industries; to inquire into the economic conditions affecting those industries; to promote health and safety in mines and the mineral industry through research; and for other related purposes as authorized by law, [$174,759,000] $145,712,000 of which [$105,035,000] $77,722,000 shall remain available until expended.

(16 U.S.C. 1133(d)(2), 3150(a); 30 U.S.C. 1-16, 21(a), 861(b), 951(a), 1221(a)(1), 1221(a)(2)(A), 1222(a)(c), 1226(d)(1)(2), 1602, 1603; 43 U.S.C. 1782(a); 50 U.S.C 98g(a)(1), 2062; Department of the Interior and Related Agencies Appropriations Act, 1990, as included in Public Law (101-121.)

APPROPRIATION LANGUAGE CITATIONS

BUREAU OF MINES

Appropriation: Mines and Minerals

1. For expenses necessary for conducting inquiries, technological investigations and research concerning the extraction, processing, use, and disposal of mineral substances without objectionable social and environmental costs.

30 U.S.C. 3
30 U.S.C. 1602
30 U.S.C. 1603

30 U.S.C. 3 provides that "It shall be the province and duty of the Bureau of Mines, subject to the approval of the Secretary of the Interior, to conduct inquiries and scientific and technologic investigations concerning mining, and the preparation, treatment, and utilization of mineral substances..."

30 U.S.C. 1602 provides for "...Federal agencies to facilitate availability and development of domestic resources to meet critical materials needs."

30 U.S.C. 1603 provides for "...improved methods for the extraction, processing, use, recovery, and recycling of materials which encourage the conservation of materials, energy, and the environment;"

2. To foster and encourage private enterprise in the development of mineral resources.

30 U.S.C. 21(a)
30 U.S.C. 1602

30 U.S.C. 21(a) states that "...it is the continuing policy of the Federal Government in the National interest to foster and encourage private enterprise in...the orderly and economic development of domestic mineral resources..."

30 U.S.C. 1602 provides for the promotion and encouragement of private enterprise in the development of economically sound and stable domestic materials industries.

3. And the prevention of waste in the mining, minerals, metal, and mineral reclamation industries.

30 U.S.C. 3
30 U.S.C. 21(a)

30 U.S.C. 3 provides for the conservation of resources through the prevention of waste in the mining, quarrying, metallurgical, and other mineral industries.

30 U.S.C. 21(a) provides for the encouragement of private enterprise in the development of economically sound and stable metal and mineral reclamation industries and in the study and development of methods for the disposal, control, and reclamation of mineral waste products.

4. To inquire into the economic conditions affecting those industries.

30 U.S.C. 3
30 U.S.C. 21(a)
30 U.S.C. 1603

30 U.S.C. 3 provides for inquiry into the economic conditions affecting the mining, quarrying, metallurgical, and other mineral industries. This section also provides for the dissemination of information concerning these industries.

30 U.S.C. 21(a) provides for an annual report on the state of the domestic mining, minerals, and mineral reclamation industries, including a statement of the trend in utilization and depletion of resources.

30 U.S.C. 1603 provides for "...improved collection, analysis, and dissemination of scientific, technical and economic materials information and data from Federal, state, and local governments, and other sources as appropriate;..."

5. To promote health and safety in mines and the mineral industry through research.

30 U.S.C. 3
30 U.S.C. 861(b)
30 U.S.C. 951(a)

30 U.S.C. 3 provides for "...scientific and technologic investigations concerning mining...to improve health conditions and to increase safety..."

30 U.S.C. 861(b) provides for "...the immediate application of mandatory safety standards developed on the basis of experience and advances in technology and to prevent newly created hazards resulting from new technology in coal mining. The Secretary of the Interior in coordination with the Secretary [of Health and Human Services] shall immediately initiate studies, investigations, and research to further upgrade such standards and to develop and promulgate new and improved standards promptly that will provide increased protection to the miners, particularly in connection with hazards from trolley wires, trolley feeder wires, and signal wires, the splicing and use of trailing cables, and in connection with improvements in vulcanizing of electric conductors, improvement in roof control measures, methane drainage in advance of mining, improved methods of measuring methane and other explosive gases and oxygen concentrations, and the use of improved underground equipment and other sources of power for such equipment."

30 U.S.C. 951(a) provides that "The Secretary of the Interior and the Secretary of Health and Human Services, as appropriate, shall conduct such studies, research, experiments, and demonstrations as may be appropriate (1) to improve working conditions and practices in coal or other mines, and to prevent accidents and occupational diseases originating in the coal or other mining industry; (2) to develop new or improved methods of recovering persons in coal or other mines after an accident; (3) to develop new or improved means and methods of communication from the surface to the underground area of a coal or other mine; (4) to develop new or improved means and methods of reducing concentrations of respirable dust in the mine atmosphere of active workings of the coal or other mine;... (9) to study the relationship between coal or other mine environments and occupational diseases of miners; (10) to develop new and improved underground equipment and other sources of power for such equipment which will provide greater safety;...."

6. And for other related purposes as authorized by law.

16 U.S.C. 1133(d)(2)
16 U.S.C. 3150(a)
30 U.S.C. 1221(a)(1)
30 U.S.C. 1221(a)(2)(A)
30 U.S.C. 1222(a)
30 U.S.C. 1222(c)
30 U.S.C. 1226(d)(1)
30 U.S.C. 1226(d)(2)
43 U.S.C. 1782(a)
50 U.S.C. 98g(a)(1)
50 U.S.C. 2062

16 U.S.C. 1133(d)(2) provides that "...in accordance with such programs as the Secretary of the Interior shall develop and conduct in consultation with the Secretary of Agriculture, ...[national forest wilderness] areas shall be surveyed on a planned, recurring basis consistent with the concept of wilderness preservation by the Geological Survey and The Bureau of Mines to determine the mineral values, if any, that may be present and the results of such surveys shall be made available to the public and submitted to the President and Congress."

16 U.S.C. 3150(a) states that "The Secretary shall, to the full extent of his authority, assess the oil, gas, and other mineral potential on all public lands in the State of Alaska in order to expand the data base with the respect to the mineral potential of such lands."

30 U.S.C. 1221(a)(1) provides State allotments to institutes "...to assist the States (participating States) in carrying on the work of a competent and qualified mining and mineral resources research institute or center at one public college or university in the State which meets the eligibility criteria...".

30 U.S.C. 1221(a)(2)(A) provides that "Funds appropriated under this section shall be made available for grants to be matched on a basis of no less than 2 non-Federal dollars for each Federal dollar."

30 U.S.C. 1222(a) provides research funds to mineral institutes "...for purposes of: (1) specific mineral research and demonstration projects of broad application, which could not otherwise be undertaken, including the expenses of planning and coordinating regional mining and mineral resources research projects by two or more institutes and (2) research into any aspects of mining and mineral resources problems related to the mission of the Department of the Interior, which are deemed by the Committee to be desirable and are not otherwise being studied."

30 U.S.C. 1222(c) states that "The Committee shall recommend to the Secretary the designation and utilization of such portions of the funds authorized to be appropriated by this section as it deems appropriate for the purpose of providing scholarships, graduate fellowships, and postdoctoral fellowships."

30 U.S.C. 1226(d)(1) states "There is authorized to be appropriated to the Secretary $450,000 for each of the fiscal years ending September 30, 1990, through September 30, 1994, to administer this subchapter. No funds may be withheld by the Secretary for administrative expenses from those authorized to be appropriated by sections 1221 and 1222 of this subchapter

30 U.S.C. 1226(d)(2) states " There are authorized to be appropriated to the Secretary such sums as are necessary for the printing and publishing of the results of activities carried out by institutes and generic mineral technology centers under this subchapter,....".

43 U.S.C. 1782(a) states that "prior to any recommendations for the designation of an area of wilderness the Secretary shall cause mineral surveys to be conducted by the Geological Survey and the Bureau of Mines to determine the mineral values, if any, that may be present in such areas."

50 U.S.C. 98g(a)(1) states that "The President shall make scientific, technologic, and economic investigations concerning the development, mining, preparation, treatment, and utilization of ores and other mineral substances that (A) are found in the United States, or in its territories or possessions, (B) are essential to the national defense, industrial, and essential civilian needs of the United States, and (C) are found in known domestic sources in inadequate quantities or grades."

50 U.S.C. 2062 states that the Nation's "...mobilization effort...requires the development of preparedness programs and the expansion of productive capacity and supply beyond the levels needed to meet the civilian demand in order to reduce the time required for full mobilization in the event of an attack on the United States or to respond to actions occurring outside the United States which could result in the termination or reduction of the availability of strategic and critical materials.

BUREAU OF MINES
SUMMARY OF REQUIREMENTS
(Dollar amounts in thousands)

Appropriation: Mines and Minerals

	FTE-T	Amount	FTE-T	Amount
Appropriation enacted, 1990			2,086	174,759
Reduction pursuant to P.L. 99-177				(2,316)
Adjusted Appropriation, 1990			2,086	172,443
Adjustments to Base:				
Adjustment for 1990 impact of P.L. 99-177	0	2,316		
Other increases and/or decreases	(9)	3,173		
FY 1991 base budget			2,077	177,932
Program changes (changes to base budget, detailed below)			(105)	(32,220)
Total requirements (FY 1991 Estimate)			1,972	145,712

Comparison by activities/ subactivities/program	1989 Actual		1990 Approp. Enacted to date		P.L. 99-177 Reduction	1990 Adjusted Approp.	1991 Base		1991 Estimate		Increase (+) Dec.(-) from 1990 Adjusted Appropriation		Increase (+) Dec.(-) from 1991 Base	
	FTE-T	Amount	FTE-T	Amount	Amount	Amount	FTE-T	Amount	FTE-T	Amount	FTE-T	Amount	FTE-T	Amount
Information and Analysis														
Policy Analysis	73	4,728	62	4,972	(66)	4,906	62	4,980	62	5,830	0	924	0	850
Resource Evaluation	246	16,009	245	15,866	(210)	15,656	243	15,894	245	16,794	0	1,138	2	900
Minerals Availability		7,145		6,989	(92)	6,897		7,001		7,101		204		100
Land Assessments		8,864		8,877	(118)	8,759		8,893		9,693		934		800
Mineral Commodities	162	10,600	94	6,949	(92)	6,857	94	6,957	94	7,207	0	350	0	250
International Minerals	48	3,343	37	2,809	(37)	2,772	37	2,820	37	2,820	0	48	0	0
Statistics and Information Services	0	0	91	5,697	(76)	5,621	91	5,711	91	7,711	0	2,090	0	2,000
Subtotal, Information and Analysis	529	34,680	529	36,293	(481)	35,812	527	36,362	529	40,362	0	4,550	2	4,000

Comparison by activities/ subactivities/program	1989 Actual		1990 Approp. Enacted to date		P.L. 99-177 Reduction	1990 Adjusted Approp.	1991 Base		1991 Estimate		Increase (+) Dec.(-) from 1990 Adjusted Appropriation		Increase (+) Dec.(-) from 1991 Base	
	FTE-T	Amount	FTE-T	Amount	Amount	Amount	FTE-T	Amount	FTE-T	Amount	FTE-T	Amount	FTE-T	Amount
Research														
Health, Safety and Mining Technology	671	51,672	677	55,035	(729)	54,306	674	55,113	594	38,155	(83)	(16,151)	(80)	(16,958)
Occupational Health		7,821		8,431	(112)	8,319		8,440		3,840		(4,479)		(4,600)
Ground Control		8,607		8,867	(118)	8,749		8,885		7,135		(1,614)		(1,750)
Human Factors		2,646		3,149	(42)	3,107		3,154		2,696		(411)		(458)
Mine Safety Systems		5,023		5,029	(67)	4,962		5,041		4,441		(521)		(600)
Mine Disaster Prevention		6,850		7,198	(95)	7,103		7,207		4,657		(2,446)		(2,550)
Experimental Facilities		2,321		2,334	(31)	2,303		2,337		2,337		34		0
Advanced Mining Systems		18,404		20,027	(264)	19,763		20,049		13,049		(6,714)		(7,000)
Minerals and Materials Science	393	24,643	396	26,440	(350)	26,090	394	26,485	384	24,485	(12)	(1,605)	(10)	(2,000)
Minerals Research		15,761		17,141	(227)	16,914		17,171		15,821		(1,093)		(1,350)
Materials Research		8,882		9,299	(123)	9,176		9,314		8,664		(512)		(650)
Environmental Technology	176	14,574	177	15,060	(200)	14,860	176	15,082	158	11,082	(19)	(3,778)	(18)	(4,000)
Control of Mine Drainage and Liquid Wastes		5,416		5,646	(75)	5,571		5,657		3,907		(1,664)		(1,750)
Solid Waste Management and Subsidence		5,758		5,914	(78)	5,836		5,923		5,173		(663)		(750)
Abandoned Mined Land Reclamation Research		1,900		2,000	(27)	1,973		2,002		2,002		29		0
National Mine Land Reclamation Center		1,500		1,500	(20)	1,480		1,500		0		(1,480)		(1,500)
Subtotal, Research	1,240	90,889	1,250	96,535	(1,279)	95,256	1,244	96,680	1,136	73,722	(114)	(21,534)	(108)	(22,958)
Mineral Institutes														
Allotment Grants		4,425		4,425	(59)	4,366		4,425		0		(4,366)		(4,425)
Research Grants		5,254		5,254	(70)	5,184		5,254		4,000		(1,184)		(1,254)
Program Administration	2	333	2	333	(4)	329	2	333	2	250		(79)		(83)
Subtotal, Mineral Institutes	2	10,012	2	10,012	(133)	9,879	2	10,012	2	4,250	0	(5,629)	0	(5,762)

Comparison by activities/ subactivities/program	1989 Actual FTE-T	1989 Actual Amount	1990 Approp. Enacted to date FTE-T	1990 Approp. Enacted to date Amount	P.L. 99 177 Reduction Amount	1990 Adjusted Approp. Amount	1991 Base FTE-T	1991 Base Amount	1991 Estimate FTE-T	1991 Estimate Amount	Increase (+) Dec.(-) from 1990 Adjusted Appropriation FTE-T	Increase (+) Dec.(-) from 1990 Adjusted Appropriation Amount	Increase (+) Dec.(-) from 1991 Base FTE-T	Increase (+) Dec.(-) from 1991 Base Amount
General Administration														
Executive Direction														
Office of the Director		449		450	(6)	444		451		451		7		0
Senior Advisory Staff		250		250	(3)	247		251		251		4		0
Congressional Liaison		127		127	(2)	125		127		127		2		0
Public Information		565		566	(7)	559		567		1,467		908		900
Equal Employment Opportunity		530		531	(7)	524		532		532		8		0
Regulatory Project Coordination		219		219	(3)	216		220		220		4		0
Subtotal, Executive Direction	35	2,140	35	2,143	(28)	2,115	35	2,148	36	3,048	1	933	1	900
Finance and Management														
Finance and Management Direction		390		391	(5)	386		392		392		6		0
Personnel		1,785		1,789	(24)	1,765		1,796		1,796		31		0
Finance		1,943		1,928	(26)	1,902		1,974		1,974		72		0
Budget		314		315	(4)	311		316		316		5		0
Organization and Management		568		569	(8)	561		571		571		10		0
Automatic Data Processing		2,386		4,829	(64)	4,765		2,342		2,342		(2,423)		0
Procurement		1,794		1,798	(24)	1,774		1,805		1,805		31		0
Property		1,611		1,615	(21)	1,594		1,620		1,620		26		0
General Services		6,296		7,542	(99)	7,443		12,914		12,914		5,471		0
Research Center Maintenance		500		500	(7)	493		500		600		107		100
Subtotal, Finance and Management	260	17,587	270	21,276	(282)	20,994	269	24,230	269	24,330	(1)	3,336	0	100
ROBCO Settlement		3,000		8,500	(113)	8,387		8,500		0		(8,387)		(8,500)
Subtotal, General Administration	295	22,727	305	31,919	(423)	31,496	304	34,878	305	27,378	0	(4,118)	1	(7,500)
Facilities: Purchase Spokane Research Center		900												
TOTAL, MINES AND MINERALS	2,066	159,208	2,086	174,759	(2,316)	172,443	2,077	177,932	1,972	145,712	(114)	(26,731)	(105)	(32,220)
Contributed Funds	9		9				9		9					
Reimbursables	40		40				40		40					
Helium Fund	217		207				207		207					
(Not Subject to Ceiling)	(27)		(28)				(28)		(28)					
Total, FTE	2,305		2,314				2,305		2,200					

JUSTIFICATION OF BASE ADJUSTMENTS

MINES AND MINERALS

(Dollar amounts in thousands)

	FTE-T	Amount
Increases/decreases	-9	+5,489
CSRS/FERS Retirement Costs	—	+302
The adjustment is for the increase in estimated retirement costs resulting from the continuing growth in the relative proportion of FERS employees in the bureau work force.		
Workers Compensation payments	—	+249
The adjustment is for increased costs for compensation to injured employees to be paid to the Department of Labor,Federal Employees Compensation Fund, pursuant to 5 U.S.C. 8147(b)as amended by Public Law 94-273.		
Rental payments to GSA	—	+2,414
The adjustment is for increased costs payable to GSA resulting from higher rates for office and non-office space.		
Federal Finance System	—	+39
The adjustment is for incremental cost of operation and/or implementing the Department's standard administrative accounting system, the Federal Financial System (FFS).		
One more workday in FY 1991	—	+319
The increase for personnel compensation results from there being one more paid workday in FY 1991 than in FY 1990.		
Headquarters Relocation	—	+2,900
The adjustment is for increased costs associated with the relocation of the Bureau's headquarter from Columbia Plaza to other space in a delineated area within the District of Columbia.		
Postage	—	-144
The adjustment reflects economies associated with the Bureau's conversion to a metered mail system in most of its locations.		
Drug Free Workplace	—	+16
The adjustment is for increased costs of fostering a drug free workplace.		

JUSTIFICATION OF BASE ADJUSTMENTS

MINES AND MINERALS

(Dollar amounts in thousands)

	FTE-T	Amount
ADP Conversion	—	-2,496

The adjustment is for decreased costs related to the phase out of the bureau's General Purpose Computer Center in Denver.

	FTE-T	Amount
Departmental Working Capital Fund	—	-63

The adjustment is for decreased costs assigned to the bureau for administrative services provided on a Departmentwide basis. In FY 1991, costs for the Washington Interagency Telecommunications System (WITS), the GSA-provided computerized telephone system for the Interior Complex and the Department's in-house data interface/transport system, will decrease. Major acquisition and start-up costs for WITS will occur in FY 1990, with reduced costs in 1991 related primarily to maintenance. This reduction will be partially offset by adjustments for safety management and printing.

	FTE-T	Amount
Additional cost of the 1991 pay raise	—	+947

The adjustment is the additional amount needed in 1991 to cover 40 percent of the additional three quarter's cost of the estimated 3.5 percent pay raise effective in January 1991. Of this amount $890 thousand is for general schedule pay and $57 thousand is for wage board pay. The 1991 cost of the remaining 60 percent will be absorbed in FY 1991.

	FTE-T	Amount
Adjustment for 1990 Effect of the P.L. 99-177	—	+2,316

The Balance Budget and Emergency Deficit Control Act of 1985 (P.L. 99-177) as amended required a reduction in non-exempt programs in FY 1990. Since the reduction applies to FY 1990 only, this adjustment is made to allow a more comparable basis for showing program changes from FY 1990 to FY 1991.

	FTE-T	Amount
Adjustment for Administrative Efficiency	—	-848

The Department proposes to decrease spending for consultant, travel, overtime, supplies, and equipment by about 5 percent to improve administrative efficiency and place greater priority on 1990 program initiatives. Specific reduction are proposed in the following areas:

Consultant	-6
Travel	-179
Overtime	-28
Supplies	-237
Equipment	-398
Total	-848

JUSTIFICATION OF BASE ADJUSTMENTS

MINES AND MINERALS

(Dollar amounts in thousands)

	FTE-T	Amount
Adjustment for Staffing Efficiency	-9	-462

Saving are proposed from a planned reduction in the average grade achieved by filling positions at an average of one grade lower than previously filled and from taking into account an expected additional lapse of 30 days before filling positions that become vacant in 1991. Specific reductions follow:

Average Grade	-205
Lapse	-257
Total	-462

ACTIVITY SUMMARY

Activity: INFORMATION AND ANALYSIS

(Dollars in thousands)

Subactivity	1989 Actual	1990 Approp Enacted	1990 Adjusted Approp	1991 Base	1991 Estimate	Inc (+) Dec (-) from Base
Information and Analysis	34,680	36,293	35,812	36,362	40,362	+4,000

Justification of Program and Performance

ACTIVITY/SUBACTIVITY OVERVIEW

ACTIVITY: INFORMATION AND ANALYSIS
SUBACTIVITY: INFORMATION AND ANALYSIS

(Dollar Amounts in Thousands)

Program Elements		1990 Enacted To Date	1990 Adjusted Approp	1991 Base	1991 Estimate	Inc. (+) Dec. (-) From Base
Policy Analysis	$	4,972	4,906	4,980	5,830	850
	(FTE-T)	(62)	(62)	(62)	(62)	(---)
Resource Evaluation	$	15,866	15,656	15,894	16,794	900
	(FTE-T)	(245)	(245)	(243)	(245)	(+2)
Minerals Availability		{6,989}	{6,897}	{7,001}	{7,101}	{100}
		(108)	(108)	(108)	(108)	(---)
Land Assessment		{8,877}	{8,759}	{8,893}	{9,693}	{800}
		(137)	(137)	(135)	(137)	(+2)
Mineral Commodities	$	6,949	6,857	6,957	7,207	250
	(FTE-T)	(94)	(94)	(94)	(94)	(---)
International Minerals	$	2,809	2,772	2,820	2,820	---
	(FTE-)	(37)	(37)	(37)	(37)	(---)
Statistics and Information Services	$	5,697	5,621	5,711	7,711	2,000
	(FTE-T)	(91)	(91)	(91)	(91)	(---)
Total Requirements	$	36,293	35,812	36,362	40,362	4,000
	(FTE-T)	(529)	(529)	(527)	(529)	(+2)

IMPACT OF PUBLIC LAW 99-177:

Information and Analysis	1990 Enacted To Date	PL 99-177 B.A.Cancellation	1990 Adjusted Approp.
	36,293	-481	35,812

As a result of the $481,000 P.L. 99-177 reduction, vacancies will be filled at a slower rate than normal, travel and training will be reduced, and equipment purchases will be deferred.

INFORMATION AND ANALYSIS

The Bureau is the world's premier source of mineral data. The agency collects information on mineral production and consumption in the United States and throughout the world. It assesses the worldwide availability of minerals, giving highest priority to deposits in countries friendly toward the United States. It analyzes the impact that government policies, economic conditions, and political events have on the mineral sector of the economy and the mineral position of the United States.

Statistical data and analytical studies prepared by the Bureau help government officials make decisions about land use, regulations, trade policy, defense preparedness, and other issues. Members of Congress call on the Bureau for expert opinions when they write legislation, conduct oversight hearings, or satisfy demands from constituents. Other Federal agencies, such as the Departments of Defense, State, and Commerce, the Environmental Protection Agency (EPA), and the Central Intelligence Agency rely heavily on Bureau data and specialists in carrying out their responsibilities. Thousands of individuals and organizations depend on the Bureau for information about minerals. Mineral industry executives use Bureau data in managing their businesses. Market analysts study Bureau data and projections to make investment decisions. Economists, statisticians, scientists, engineers, librarians, teachers, association executives, and university professors use and benefit from information provided by the Bureau.

Bureau specialists are experts in their fields. These specialists include commodity and foreign country specialists, mineral statisticians, economists, mining engineers, geologists, policy analysts, and other professionals with special skills. Their work allows the Nation to identify potential mineral resource problems and prepare to meet the challenges of the future.

Domestic data are collected on approximately 100 mineral and material commodities through direct canvassing of industrial establishments, and international data on approximately 160 countries through a variety of sources such as U.S. embassies, foreign government organizations, private sector contacts, literature review, and on-site visits by Bureau specialists.

The data are reviewed and evaluated, and then disseminated through Bureau publications, professional meetings, and personal contacts. The Bureau maintains a worldwide data base that includes geologic, engineering, and cost information on more than 3,000 of the largest deposits, mines, and facilities covering more than 30 minerals.

The agency also conducts mineral assessments and surveys on public lands to provide information needed by the Federal government or Congress when it is considering withdrawing those lands from minerals entry, and for multiple use planning by the Bureau of Land Management (BLM) and the Forest Service (FS).

These activities which are carried out through programs of the Information and Analysis Directorate, support the National Minerals and Materials Program Plan of 1982 and the responsibilities of the Secretary of the Interior under the following laws:

- The Mining and Mineral Policy Act of 1970
- The National Materials and Minerals Policy, Research, and Development Act of 1980
- The National Critical Materials Act of 1984
- More than 30 statutes which mandate the collection and analysis of mineral information for Federal lands.

The Bureau's mission in Information and Analysis is to provide accurate, reliable, and timely minerals and materials information and analysis for use by the public and decisionmakers at all levels of government. The goals associated with this mission are as follows:

- Strengthen the competitive position of the minerals and materials sector of the U.S. economy
- Foster cost-effective minerals and materials-related regulations
- Encourage production of minerals and materials from domestic sources
- Mitigate vulnerability of the U.S. economy to disruptions in the supply of minerals and materials

To strengthen the competitive position of domestic industries, the Bureau analyzes the significant factors and forces that affect the U.S. mineral position in a world economy. Analysts compare cost structures of domestically produced commodities with analogous costs for the same commodities in other countries, and make policy recommendations that would reduce the comparative disadvantages of U.S. producers, particularly in the area of government regulation. In FY 1991, the Bureau will complete commodity reports for iron, steel, aluminum, platinum, rare earth, tin, and tungsten. Work will continue on the comparative cost evaluations requested by Congress between representative U.S. coal mines and mines of the major coal-exporting countries.

Under the terms of the U.S.-Canadian Free Trade Agreement, both governments will examine specific subsidies provided to various industries, evaluate their competitive impacts, and recommend measures to reduce or eliminate them. In response to congressional requests, the Bureau will participate in this process and will begin an evaluation of the subsidies provided by the Federal and Provincial governments in Canada to mineral and material industries. The Bureau will also complete an analysis of the impacts of the proposed Western European Economic Integration of 1992, and the Uruguay round of trade negotiations on U.S. mineral and material industries.

The Bureau represents the Department of the Interior on the interagency Working Group on Multilateral Aid--a group which evaluates mineral project loans proposed by international financial institutions. The Bureau will continue this activity and seek to prevent loans that can be financed by private institutions or that would lead to excess world production capacity.

Enhanced productivity strengthens competitiveness, and new technologies can improve productivity. Certain types of technologies, often called clean technologies, particularly recommend themselves because they not only enhance productivity, but do so by reducing the amount of undesirable waste, and hence the environmental impacts, associated with current technology. The Bureau will continue working with agencies such as the EPA to encourage the use of clean technologies.

The Bureau is sponsoring a study by the National Academy of Sciences which will examine the competitiveness of the domestic mineral industry and determine where new technologies can significantly improve productivity and reduce costs. The study, to be completed in FY 1990, will also address institutional issues and identify alternative ways through which the Federal government can strengthen the competitiveness of domestic mineral producers. The Bureau plans to carry out the feasible government-related recommendations made by that study in FY 1991 and subsequent years. The Bureau will also continue its efforts to carry out the intent of Presidential Executive Order 12951 of April 1987, which directs the development of mechanisms for transferring foreign technologies to domestic users.

In a report on advanced materials, the congressional Office of Technology Assessment echoed the widely shared belief that new materials technologies will help determine the global competitiveness of U.S. manufacturing industries in the 1990's and beyond. The materials field is undergoing rapid changes, especially in an area of particular interest to the Bureau of Mines--the substitution impacts of new materials on traditional materials. A workshop recently sponsored by the Bureau and U.S. Geological Survey (USGS) on advanced materials, identified the lack of reliable information as the major problem in assessing such impacts. The problem still exists. Consequently, the Bureau, with the assistance of the Oakridge National Laboratory, is examining information systems for the advanced materials field that are consistent with its mission, and proposes to put in place an advanced materials data base by FY 1991. The Bureau will then disseminate information on advanced materials through its established publications.

To foster cost-effective minerals-related government regulations, the Bureau will continue analyzing alternatives to proposed regulations. Issues related to the impact of clean air legislation on the mineral industry, the promulgation of mining waste regulations under the Resource Conservation and Recovery Act, the impact of regulations on secondary recovery and recycling, and options for reuse or disposal of spent potliners in the aluminum industry will be addressed in FY 1991. The Bureau also proposes to expand its work on developing more effective regulatory mechanisms that will achieve environmental goals applicable to mining and mineral processing with economic efficiency. These mechanisms would use market incentives to motivate industry instead of command-and-control rules, thus minimizing the negative impact that environmental regulations would have on income, employment, and investments.

To encourage the production of minerals and materials from domestic sources, the Bureau will continue to provide land-use information to Congress and the land-managing agencies, and promote policies that keep Federal lands open for mineral exploration and development.

In FY 1991 the Bureau will continue the forest-wide mineral assessments that are being conducted under a Memorandum of Understanding with the USGS and the FS. The FS uses this information to develop forest-wide land-use plans. The Bureau also proposes to conduct mineral studies on Resource Management Areas for the BLM's planning process, and assist that agency in estimating values for mineral resources.

In response to a congressional directive, the Bureau carried out mineral assessments on roadless areas in Idaho during FY 1989 and FY 1990. These assessments will support the evaluation of future wilderness designations in Idaho. The assessments are coordinated with the USGS and the Idaho Geological Survey; the Bureau plans to continue this work in FY 1991.

The Bureau will continue its work in Alaskan Mining Districts by completing the report on the Valdez District, continuing work in the Ketchikan District, and beginning work in the Colville District. The information that is generated is used by land-management agencies in land-use planning and by private industry in planning the future development of Alaskan mineral resources.

The USGS and the Bureau propose to expand the Survey's Conterminous United States Minerals Assessment Program (CUSMAP) by including Bureau data on identified resources, engineering costs, and mineral economics. The current program estimates tonnages and grades, but does not provide economic analyses for areas with significant mineral resources.

In response to the National Materials and Minerals Program Plan of 1982, the Bureau began a program of detailed studies--the Inventory of Land Use Restraints Program (ILURP)--showing the relationships between land restrictions on Federal lands and information on known mineral resources for 11 Western states and Alaska. These studies are provided to the BLM and the FS for land-use decisions, submitted to Congress for deliberations on wilderness legislation, and used by private industry in planning exploration and development. So far, eight states, including Alaska, and some areas in the four remaining states have been studied. In FY 1991 work will continue in Montana and Wyoming. The Bureau will focus on areas that are candidates for future congressional or land-management agency decisions.

The Bureau's work on potential supply analysis is related to the ILURP effort. Its purpose is to estimate statistically the potential economic supplies of discovered and undiscovered mineral resources. Most of the work so far has been in Alaska.

The Bureau must be able to retrieve quickly and analyze the enormous amount of land-related information that it has collected over the last 25 years and present such information in visual form to Congress and other agencies. To improve its capabilities in these areas, the Bureau proposes to install a geographic information system in FY 1991. The Bureau has coordinated planning for this system with the USGS and the land-managing agencies.

To decrease the vulnerability of the United States to disruptions in mineral supplies, the Bureau is proposing an initiative that would identify and evaluate strategic and critical mineral resources in Alaska. Alaska has the highest potential in North America for undiscovered strategic and critical minerals. Initial work will focus on platinum-group metals, chromium, and manganese--minerals for which the United States depends heavily on South Africa. This initiative is in accord with the Anti-Apartheid Act of 1986 which requires that the President develop a program to lessen the dependence of the United States on South Africa for strategic minerals.

Over the last few years, the Bureau has done extensive analytical work for Congress and the Federal government on issues related to mineral supplies from South Africa. It will continue to provide such analyses in FY 1991. The Bureau will also continue its participation in the International Strategic Minerals Inventory Group--a working group of six Western countries--which over the last 10 years has collected and published information on worldwide deposits of strategic and critical minerals and minerals important for the production of advanced materials.

In support of the Bureau's mission and the goals specified above, the Information and Analysis directorate collects and disseminates the official mineral statistics of the United States. These statistics and their interpretations are published in the minerals yearbooks, commodity summaries, mineral industry surveys, minerals and materials periodical, minerals availability reports, the Secretary's annual report to Congress on the minerals industry, and other series and special reports.

Data are gathered domestically through direct industry canvassing, and worldwide through contacts with U.S. embassies, industry, trade and technical associations, universities, and technical, scientific, and trade journals. In addition to publications, the information is disseminated through personal contacts, professional meetings, and other mechanisms.

To support all of the described activities, the Information and Analysis Directorate needs to maintain a strong infrastructure. That infrastructure includes not only the Directorate's human resources but also the techniques, equipment, and data systems it uses to collect, analyze, and disseminate information. In recent years, the Bureau has examined the effectiveness of much of this infrastructure. In FY 1989, for example, several surveys of users of Bureau information were conducted by private firms. A major internal review of all periodic publications issued by the Information and Analysis directorate examined them with respect to timeliness, data coverage, use, and appearance. In addition, to correct some long-standing problems, the Bureau compared its data processing and statistical procedures with those of other major Federal statistical agencies and its counterpart agency in Canada.

These comparisons and evaluations pointed out the need for a major comprehensive upgrade of the Bureau's information function. That upgrade will include:

o Use of different processing technology and desktop publishing to increase the timeliness and improve the appearance of the directorate's publications.
o The addition of a Statistical Compendium that will provide the official historical mineral statistics of the United States.
o Modernized survey techniques, upgraded statistical standards, and improved processing.
o Telephonic data collection and rapid processing of major commodity data.
o An electronic bulletin board for rapid dissemination of mineral industry survey data.
o Conversion of two large independently developed data bases to relational data bases, so that data in one data base can be related to data in the other. (One of these data bases contains information on worldwide deposits, mines, and mineral processing facilities. The other covers mineral production, consumption, capacities, and similar data.)
o Acquisition of minicomputers to replace mainframe computers of antiquated vintage.

The FY 1990 budget provides funding to the Bureau for minicomputers and partial data base conversion. Additional funding necessary to continue with this upgrade is requested for FY 1991.
Since the Bureau is establishing an advanced materials function in the Information and Analysis directorate, funding for this activity will be requested in FY 1992 and thereafter.

Most of the work described here will continue in FY 1992 and beyond. The Free Trade Agreement with Canada, the economic merger of the European Community in 1992, and the Uruguay round of trade negotiations that are scheduled to be concluded in 1990 will all significantly affect the ability of the U.S. mineral industry to compete in domestic and international markets. Provisions of the Free Trade Agreement with Canada specify a period of five to seven years for recommendations related to Canadian and U.S. subsidies--an issue of considerable importance to domestic producers of minerals.

Work in the regulatory area will continue for the indefinite future and may in fact expand. Environmental issues, along with economic issues and financial issues, will essentially determine whether the domestic mineral industry can compete in international markets.

Much of the Bureau's mineral assessment work on public lands is also of a long-term nature. For example, mineral evaluations of FS lands are adjusted to that agency's 10-year planning cycle. It takes 4 to 5 years to complete work on an Alaskan Mining District. Funding requests for joint CUSMAP work with the USGS, continuation of the congressional directive for work in Idaho, and acquisition of hardware, software, and training for a geographic information system will be included in the FY 1992 budget.

All activities described under the Information Function upgrade will continue in FY 1992 and (except for the data base conversions) in future years as well. The upgrade can succeed only if it involves the ongoing evaluation and improvement of Bureau capabilities.

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AUTHORIZATION: 30 U.S.C. 1-11; 16 U.S.C. 1131-1136; 43 U.S.C.

OBJECTIVES:

- o Provide comprehensive quantitative economic analyses on the major factors that influence the competitive position of the domestic mineral industry, the contributions that the industry makes to the Nation's economy and its regions, and the impact that domestic and international considerations and actions have on the domestic supply of minerals.
- o Specify and analyze policy options to assist Federal and State governments and the private sector in improving the availability of strategic and critical minerals and other minerals essential to a healthy domestic economy.
- o To help ensure effective public and private mineral and material-related decisions by providing reliable cost analyses of primary and alternative sources of mineral supply, alternative process and materials technologies, and regulatory and policy options.
- o To assess mineral resources on public lands, encourage production from domestic sources, and improve land-management decisions by the Congress, Federal land management agencies, and the public.
- o Provide reliable information for analyses of national mineral problems and disseminate worldwide information on the production, consumption, and availability of nonfuel minerals.
- o Serve as the principal U.S. government source of international minerals information. Through informed, accurate analysis contribute to U.S. policy decisions (including those involving accessibility to strategic minerals and materials) within the context of a world economy.
- o To enhance statistical procedures, data processing, and the Bureau's information publications.

RELATED BUREAU OF MINES ACTIVITIES: Information and Analysis provides information and analyses to all program areas of the Bureau's Research Directorate.

RELATED FEDERAL AND STATE AGENCY ACTIVITIES: Information and Analysis provides services to, and coordinates its activities with, other Bureaus such as the U.S. Geological Survey, Bureau of Land Management, Minerals Management Service, and the Bureau of Indian Affairs in the Department of Interior, Departments such as State, Commerce, Agriculture, Labor, Energy, Defense, other agencies such as the Environmental Protection Agency, the Nuclear Regulatory Commission, the Federal Emergency Management Administration, and State Agencies.

* * * * * *

POLICY ANALYSIS

OVERVIEW: Objectives are accomplished by identifying the key issues and analyzing them through the seven Policy Analysis program subelement areas described below.

PROBLEM: Since many domestic metal and mineral sectors produce standardized commodities that are traded competitively in a world market, changes in international and national economic, political, and technical conditions can significantly impact the competitive position and even the viability of the domestic industry. The U.S. mineral industry is affected by actions under the General Agreement on Tariffs and Trade (GATT) emanating from the Uruguay round of negotiations, by changes in competitiveness resulting from bilateral trade agreements and the 1992 European Common Market integration, by Japanese trade and investment actions, and by actions of Pacific rim countries, Brazil, the Soviet Union, and China. In this country, Federal and State policies and regulations to protect our environment and the health and safety of our population have increased domestic production costs substantially, reducing our ability to compete with foreign producers who often are not under comparable requirements. Moreover, land management decisions and land use legislation have restricted the domestic industry's access to potentially favorable mineralized areas. Subsidies and other assistance offered to foreign mineral producers also affect the competitiveness of domestic producers in world markets. The dependence of the United States on vulnerable sources for materials designated as strategic and critical is of equal importance to policymakers Additional concerns include issues related to the emergence of new materials needed for important strategic and industrial applications.

Policy Analysis Program Subelements: To meet its objectives, a Policy Analysis program has been developed consisting of the following program subelements:

- o International Competitiveness, Finance, and Trade Assessments
- o Regulatory Analyses
- o Advanced Material Analyses
- o Public Lands and Mineral Activity Analyses
- o Strategic and Critical Minerals Assessments
- o Technology Transfer and Clean Technologies
- o Analytic Tool Development and Recurring Publications

PROGRAM:

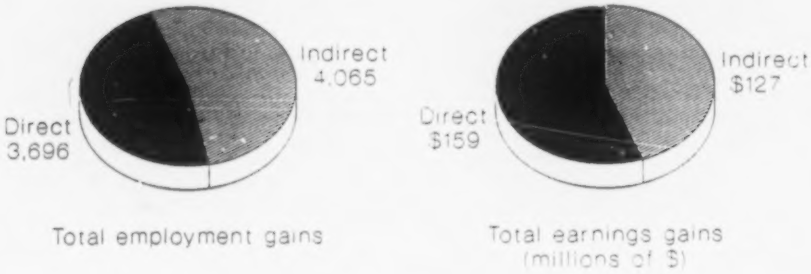
International Competitiveness, Finance, and Trade Assessments: This program subelement assesses: (1) the major considerations affecting the competitive position of the domestic minerals and materials industry in world markets, (2) international financing of foreign mineral projects, and (3) major trade actions impacting the domestic minerals and materials industry, including the implications of bilateral and multilateral trade agreements.

Progress in FY 1990 and Prior Years:

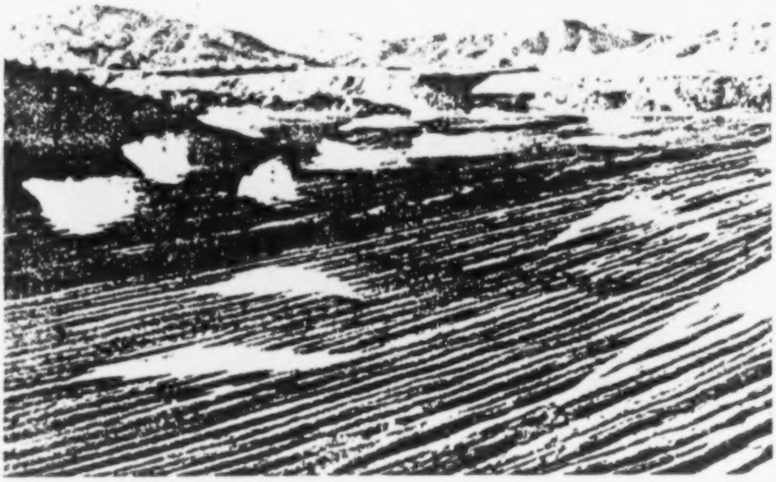
International Competitiveness. The Bureau conducted analyses of significant factors influencing the competitiveness of major domestic mineral industry sectors in response to congressional, executive branch, and industry requests. These studies included comparative cost analyses of world copper producers as well as an assessment of domestic iron and steel industry competitiveness during the 1980's. The Bureau found that more favorable exchange rates and lower labor costs were the major factors involved in improving the domestic copper industry's competitiveness since 1985. Analysts concluded, that given the present world producer cost structure, the domestic iron ore industry could continue to operate even if the price of pellets were to drop by as much as 10-20 percent because its shipping costs to Midwestern steel mills are lower than those for imports.

MINING IS IMPORTANT IN MANY STATES

new jobs and more earnings are created

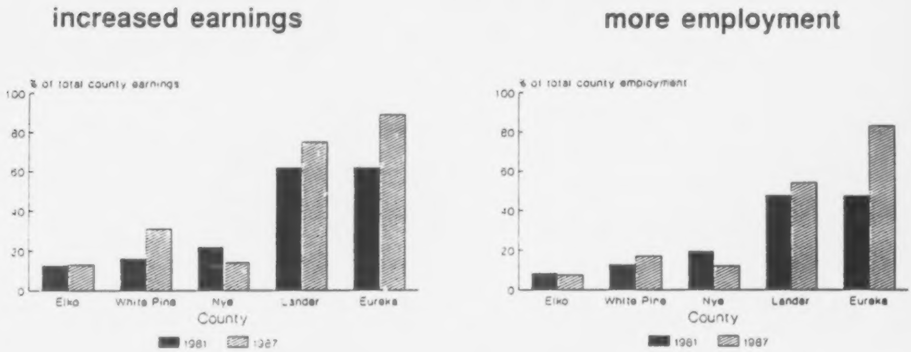


Increased gold and silver mining activity created new employment and earnings in Nevada from 1981 to 1987.

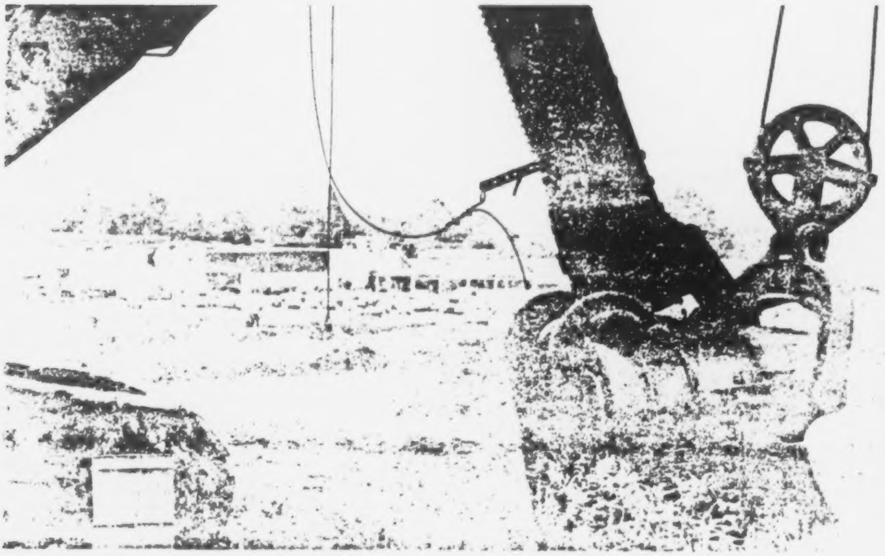


Heap leaching developed by the Bureau of Mines has increased gold production in many states.

BUREAU STUDIES SHOW ECONOMIC BENEFITS OF NEW MINING



Mining generated significant direct and indirect earnings and employment for rural Nevada in the '80s.



New mining benefits the community.

In FY 1989, the Bureau completed a study that identified significant antitrust, taxation, and transportation issues adversely affecting the competitiveness of the U.S. mineral industry. A value-added tax and an alternative-minimum tax were identified as policies likely to have the greatest impact on competitiveness. The Bureau began a follow-on study to estimate the impact of a value-added tax imposed on the domestic mineral industry. This study will be available to Congress and decisionmakers in the public and private sectors.

In FY 1990, a study assessing the impact of unfunded pension liabilities on the competitive position of selected U.S. steelmakers was completed. This study revealed that the high cost of unfunded pension liabilities may threaten the viability of certain producers if market prices decline.

A National Academy of Sciences study funded by the Bureau identified new technologies and applications for minerals (e.g., as components of advanced materials) that would improve mineral industry competitiveness. A study begun in FY 1990 will quantify the decline of research and development spending in the domestic mining and mineral processing sectors, and assess the impact of that decline on U.S. competitiveness.

The Bureau also conducted studies estimating the direct and indirect contributions of mining to regional and State economies. These studies estimate the changes in employment, income, and tax revenues in selected States and counties resulting from mining activities. Reports have been completed for Arizona, Idaho, Nevada, and New Mexico. In FY 1989, results from these studies were used in Departmental testimony to Congress on S.1126 which proposed amendments to the Mining Law of 1872.

International Finance. The Division of Policy Analysis served as the Department of the Interior representative on the Interagency Working Group on Multilateral Aid, which evaluates proposed mineral project loans by international financial institutions. At least 2 dozen evaluations of proposed projects are completed on average each year. These assessment activities contributed to the World Bank's decision to pursue a more conservative lending policy. Proposed Export-Import Bank loans and guarantees for mineral projects also were examined by Policy Analysis staff members who attended meetings of the National Advisory Council on International Monetary and Financial Policies.

In FY 1989, analysts updated an earlier report that examined the growth and impact of foreign investment in the domestic mineral industry. The new report indicated that such investment was primarily in the stone, clay, glass, primary metals, and chemical sectors. Funds from Western Europe, Canada, and Japan are the largest sources of investment.

International Trade. The Division of Policy Analysis represents the Bureau on the Section 409(b) Committee chaired by the Office of the U.S. Trade Representative (USTR). The Committee, which was established in response to the U.S.-Canadian Free Trade Agreement, identifies U.S. industries that would lose domestic markets to subsidized Canadian exports. In FY 1989, the Division analyzed a petition by the Nonferrous Metals Producers Committee which sought identification of the copper, lead, and zinc industries as industries that would be adversely affected by competition from Canadian producers. As a result of this analysis, all three industries have gained access to USTR information on government subsidies which support their Canadian competitors.

In FY 1988, Canadian potash producers agreed to reduce exports to the United States following a Bureau study for Congress that identified the "home market price" of Canadian potash. In FY 1989, at the request of the Congress and USTR, analyses identifying and quantifying non-tariff barriers to mineral and materials trade were completed. These analyses provided information useful to Congress and the USTR in assessing allegations of wrongdoing under GATT and the U.S.-Canadian Free Trade Agreement.

In FY 1990, work began on two analyses: (1) a study of the upcoming European Community integration in 1992, including its implications for the U.S. mineral industry; and (2) a study of the Pacific Rim countries to identify mineral-producing nations with possible competitive advantages vis-a-vis the United States.

Proposed Work in FY 1991:

International Competitiveness. Several analyses will be performed to inform Federal decisionmakers about key factors that influence U.S. industry competitiveness. For example, the study to quantify the decline of research and development spending in the domestic mining and mineral processing industries and the implications of that decline will be completed. Analysts will continue comparative cost analyses of U.S. and foreign copper, iron ore, and steel producers.

International Finance. The Bureau will continue evaluations of proposed mineral project loans by international financial institutions and the Export-Import Bank. As the Department's representative on the Working Group on Multilateral Aid, the Division of Policy Analysis will seek to restrain loans that could be financed by private institutions or that would lead to excess world production capacity. An analysis of the impact of debt reduction on world copper markets will begin, and will be used to estimate future foreign competitiveness and exports to U.S. markets.

International Trade. Studies will be undertaken to analyze the impact of selected policy actions addressing problems and opportunities identified in the European Community integration study. The study of Pacific Rim countries will be completed.

Regulatory Analysis: This program subelement is intended to foster cost-effective Federal and State regulations of the U.S. mining and mineral processing industries. Economic impact assessments of environmental, taxation, transportation, and other regulatory actions, including those that employ market incentives, are conducted.

Progress in FY 1990 and Prior Years:

In FY 1989, the Bureau developed a methodology to estimate the economic impact of alternative Federal and State controls on mining and processing wastes generated by domestic copper producers. Analysts found that under a severe regulatory scenario, which would involve closing all existing copper waste management units, domestic copper mines would not be able to compete against foreign producers. The capability to assess alternative control mechanisms was developed in close coordination with the Environmental Protection Agency (EPA) so that States can use this tool in developing cost-effective regulatory programs when Federal guidelines are established in FY 1992.

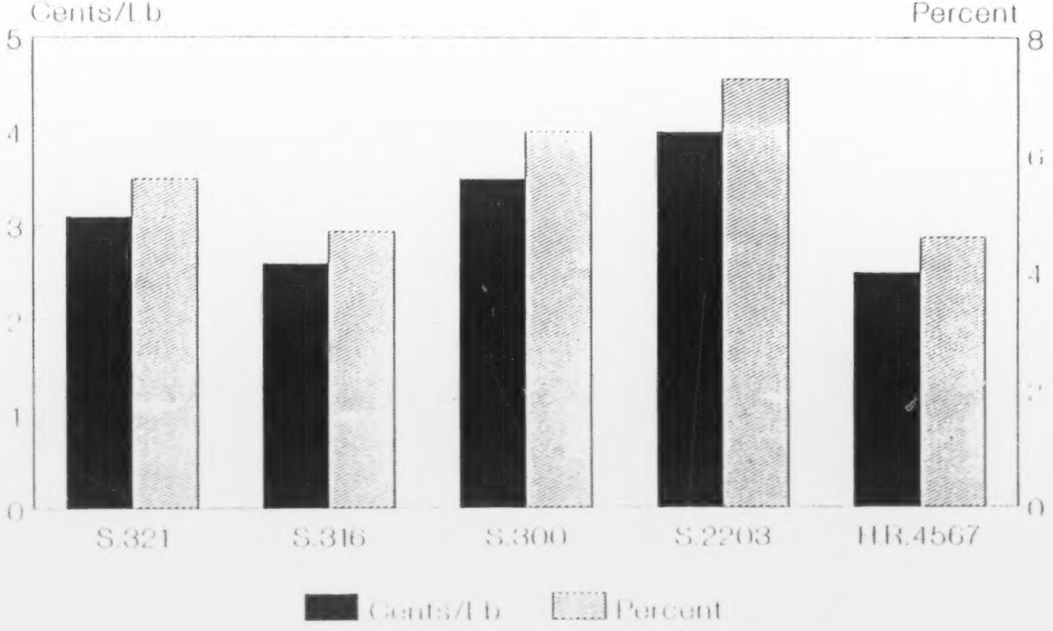
Both acid rain and clean air legislation are expected to increase the cost of electricity in this country. Higher electricity costs will affect key sectors of the mineral industry. A study completed in FY 1989 assessed the potential impact of alternative acid rain legislation on electricity costs in the energy-intensive aluminum smelting industry. The study indicated that about one-half of the domestic aluminum industry would be jeopardized by higher electricity rates. The Bureau briefed congressional staff members on the study findings, and analyzed additional bills at their request. An empirical analysis of industry efforts to recycle spent potliners (a potentially hazardous waste that results from aluminum smelting) was also completed.

An impact analysis focused on the economic implications of clean air legislation for the energy-intensive silicon/ferrosilicon industry. The study indicates that pending clean air legislation could impose significant financial hardships on the U.S. silicon/ferrosilicon producers. A parallel study examined the economic impact of clean air legislation on domestic iron and steel producers. Work began to assess relationships between global warming and the use of fossil fuels in the mineral processing industry.

Several other analyses were completed during FY 1989. An analysis of Federal and State regulations affecting mining in Alaska revealed that the overall complexity, uncertainty, and length of the mine permitting process was perceived as the leading problem by miners in the state. Another study examined the economic impact of Occupational Safety and Health Administration (OSHA) regulations for certain nonasbestiform minerals. The study, which was presented to OSHA, found that the domestic aggregate industry (particularly small firms) would be affected most by the OSHA regulations, and that high costs could result from product liability litigation.

PROPOSED ACID RAIN BILLS WILL INCREASE ALUMINUM SMELTER COSTS

U.S. competitiveness could be affected

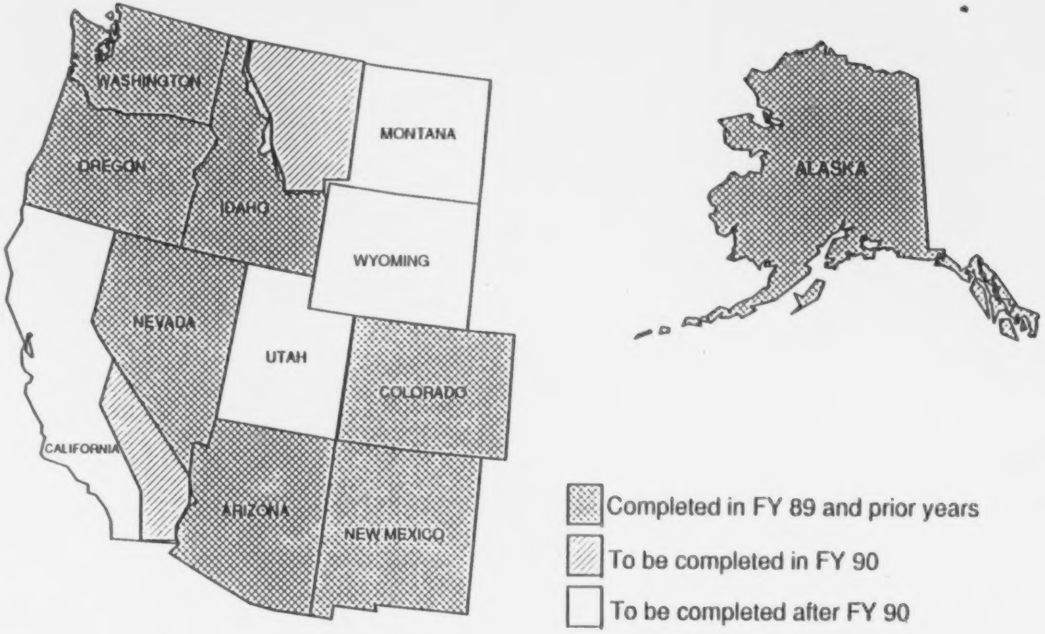


Proposed acid rain bills in Congress would increase electricity costs at aluminum smelters by as much as 5 cents per pound.

BOM-32

INVENTORY OF LAND USE RESTRAINTS PROGRAM

shows impact of federal land decisions on minerals access


WASHINGTON
OREGON
IDAHO
MONTANA
WYOMING
NEVADA
UTAH
COLORADO
CALIFORNIA
ARIZONA
NEW MEXICO
ALASKA
Completed in FY 89 and prior years
To be completed in FY 90
To be completed after FY 90

Status of the Inventory of Land Use Restraints Program Studies (Alaska is divided into six regional studies).

An economic impact assessment of the introduction of diesel-powered equipment in underground mines published in FY 1989 indicated that potential productivity increases could be obtained in selected mines with this equipment, but that pending Mine Safety and Health Administration regulations might negate some of these benefits.

An analysis of the cumulative economic impact of land management alternatives in the Beaver Creek region of Alaska was conducted for the Bureau of Land Management (BLM).

In FY 1990, the Bureau began reviewing ways to use market incentives to meet environmental policy goals that affect the mineral industry. In particular, more cost-effective alternatives to the traditional "command and control" technique of achieving environmental quality were analyzed for selected industry sectors.

The Bureau also conducted a remedial investigation and a feasibility cleanup study for EPA under the Comprehensive Environmental Response, Compensation, and Liability Act at an abandoned mineral processing site in the State of Washington.

roposed Work in FY 1991:
The Bureau is proposing a major study initiative to promote cost-effective regulation of the domestic minerals industry. This initiative, based on earlier work, includes analysis of four issues:

- o Impact of clean air legislation on the domestic mineral industry.
- o Incentives and disincentives resulting from environmental regulation, including the design of policies that utilize market incentives.
- o Impact of environmental regulations on recycling and the recovery of minerals from secondary sources such as scrap and waste.
- o Impact of controls that might be introduced to prevent global warming.

To inform Federal and State environmental agencies about cost-effective alternatives to their proposed controls, studies related to clean air regulations will include:

- o Analyses of the impact of proposed clean air legislation on the iron and steel, silicon, ferro-silicon, and other energy-intensive mineral industries. A local electric utility model developed during FY 1987-88 will be enhanced to support this work.
- o Analyses of the impact of EPA and State regulatory programs on the mineral industry. A regional electric utility model will be developed to permit assessment of relevant regulatory issues and facilitate timely assistance to States proposing regulatory programs in the early 1990's.
- o Examination of the impact of legislative and regulatory provisions and programs that encourage energy conservation for specific sectors of the mineral industry.
- o Examination of the impact on the platinum-group metals market of the increased use of catalytic methods for reducing nitrogen oxide emissions. (Platinum-group metals--imported strategic and critical commodities--are now used for automobile catalytic converters and other catalyst applications.)

In work concerning regulatory incentives and disincentives, alternative mechanisms for more effectively achieving both environmental quality and economic efficiency will be evaluated and proposed for selected industries. This effort has two primary objectives: (1) the design of environmental policies that utilize market incentives to reduce pollution while maintaining a strong domestic minerals and materials industry; and (2) analysis of the impact of current and proposed policies on personal income, employment, growth, and the environment. The automobile recycling industry and the steel industry are leading candidates for these analyses.

A series of analyses will examine regulation of secondary recovery and materials recycling. These analyses will:

- o Identify the specific provisions of existing environmental laws and regulations that contribute to rather than solve environmental and resource recovery problems.

- **o Attempt to quantify the present and future magnitude of these problems if the existing legal framework remains unchanged.**
- **o Suggest alternative Federal and State mechanisms that encourage rather than discourage the participation of the recycling and secondary recovery industries. In particular, options for industry regarding spent potliner reuse or disposal in aluminum smelting operations will be analyzed.**

The cost and economic impact methodology developed for copper will be used to address EPA guidelines for State regulation of mineral wastes planned to be established in FY 1992 under the Resource Conservation and Recovery Act (RCRA). Studies analyzing the cost and economic impact of proposed RCRA waste regulations for mineral sectors other than copper will begin so that regulatory agencies can be apprised of the effects that the proposed regulations will have on competitiveness.

Advanced Material Analyses: This program subelement assesses the impact of developments in advanced materials markets, and examines their effect on U.S. economic and strategic interests. This work is part of the Bureau's 5-year plan for advanced materials analysis that was submitted to Congress.

Progress in FY 1990 and Prior Years:

In FY 1988, the Bureau completed an analysis of the impact and policy implications of advanced materials. The study, which was reprinted by the Department of Defense, concluded that agencies and institutions that collect information on materials must give more attention to research, processing, and marketing activities. The Bureau also examined the problems and opportunities that will face advanced metal and materials producers in the coming years. The United Nations reprinted excerpts from a Bureau report that indicated significant amounts of metals, particularly steel and aluminum, could be displaced by plastic materials in the 1990's.

In FY 1989, the Bureau completed a study that forecast markets for advanced materials and examined issues such as Federal R&D expenditures, regulatory controls, international trade, antitrust, tax law, product liability, information dissemination, and intellectual property rights. This study concluded that the Federal government can influence the development of advanced materials primarily through new R&D and information programs.

Proposed Work in FY 1991:

The Bureau will undertake a study that will attempt to quantify U.S. demand for advanced high-temperature ceramic powders in the 1990's, identify the major domestic producers and consumers, and determine the extent to which the domestic advanced ceramics industry depends on foreign sources for raw materials (i.e., powders). The study also will examine the implications of domestic advanced ceramics production for U.S. vulnerability to cutoffs of mineral supplies from abroad.

Additional analyses will estimate supplies of minerals needed in the development of advanced materials, and examine environmental impacts and associated regulatory costs involved in developing and marketing advanced materials.

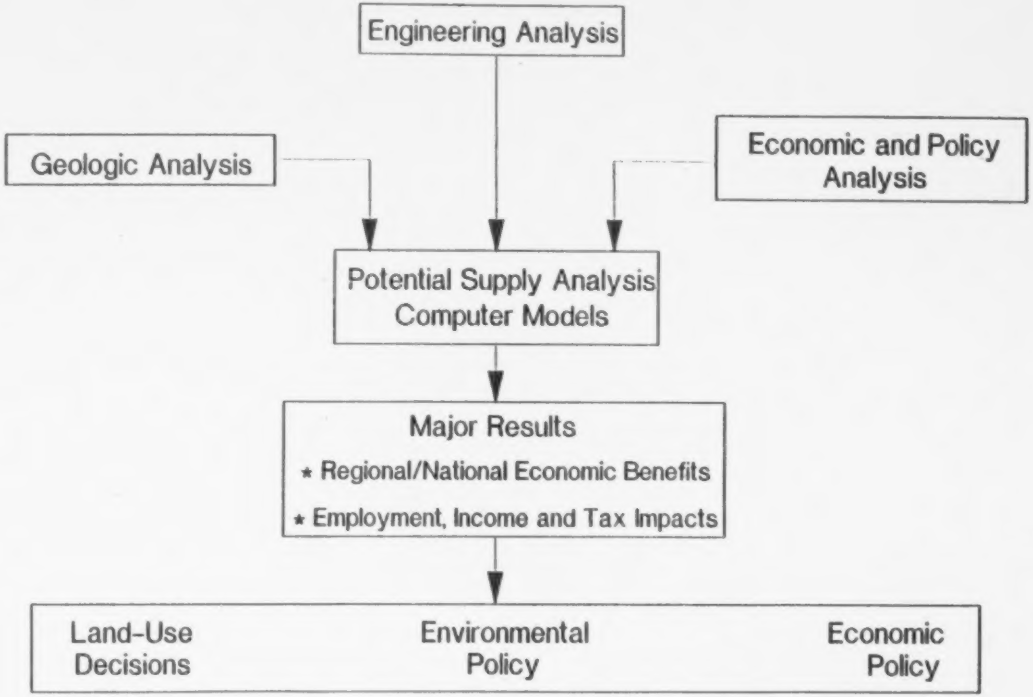
Public Lands and Mineral Activity Analyses: This program subelement consists of two types of assessments: Inventory of Land Use Restraints Program (ILURP) and Potential Supply Analyses.

Progress in FY 1990 and Prior Years:

ILURP Studies. In response to the President's National Materials and Minerals Program Plan of 1982, the ILURP--a program that provides detailed studies showing the relationship between public land restrictions and information on known mineral resources--was initiated for Alaska and 11 Western States. ILURP information is used by the BLM and the Forest Service (FS) in land-use decisions, by the private sector, and by the Bureau's Potential Supply Analysis program, which assesses the economic values of mineral resources in selected regions. The program also complements the Bureau's Mineral Land Assessment Program, which provides field-oriented geologic data related to known resources, mining district studies, and site-specific mineral investigations.

THE POTENTIAL SUPPLY ANALYSIS SYSTEM

shows economic benefits of mineral potential



Engineering Analysis

Geologic Analysis

Economic and Policy Analysis

Potential Supply Analysis Computer Models

Major Results

- Regional/National Economic Benefits
- Employment, Income and Tax Impacts

Land-Use Decisions

Environmental Policy

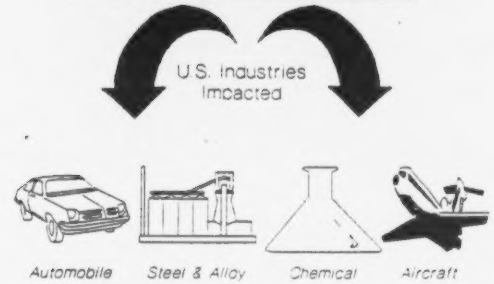
Economic Policy

BOM-36

U.S. EMBARGO ON SOUTH AFRICAN CRITICAL MINERALS WOULD BE COSTLY

major industries affected

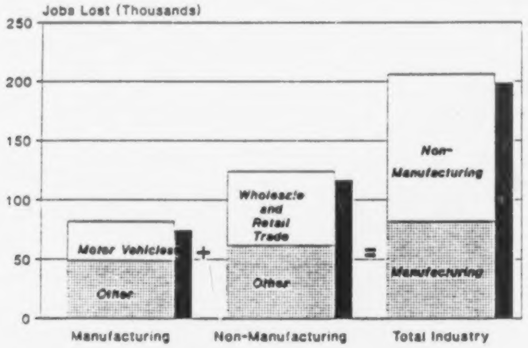
$1.85 Billion Per Year of Disruption


U.S. Industries Impacted
Automobile
Steel & Alloy
Chemical
Aircraft

Estimated direct cost of a U.S. embargo on South African strategic and critical minerals (1987 dollars).

COSTS OF U.S. EMBARGO ON SOUTH AFRICAN RHODIUM WOULD BE HIGH

over 200,000 jobs lost key industries impacted



Estimated U.S. employment losses resulting from a U.S. embargo on South African rhodium.

The Bureau has completed ILURP studies for Alaska (six regional studies and a summary report), Arizona, Colorado, Idaho, Nevada, New Mexico, Oregon, and Washington, and for Western Montana and the California desert (See map). Studies on regions in other states that are primary candidates for future congressional and Federal land management agency decisions were also completed. In addition, a map of U.S. mines and mineral processing sites and a study of selected industrial minerals in Idaho were prepared.

Potential Supply Analysis. This program statistically estimates the potential mineral supply of discovered and undiscovered resources from designated regions. The quantities and values of the undiscovered as well as discovered resources can then be explicitly considered in land-use decisions such as proposed wilderness designations. This program can also estimate the cost of development opportunities lost through restricted access to areas that may contain undiscovered mineral resources. This information was previously unavailable to land managers and public policymakers when they made land-use decisions.

Alaska's high mineral potential has been the primary focus of the program. Joint State and Bureau assessments of the Kuskokwim and Northwest regions in Alaska were completed in FY 1987. In response to a BLM request, an assessment of Alaska's Steese/White Mountain Region was completed in FY 1989. BLM used the resulting information to make planning decisions for this area. The assessment found that $88 million worth of recoverable gold was foregone as a result of restrictions on access to mineralized lands. At the request of the FS, the Bureau began assessing selected areas in the Alaska Chugach Forest in FY 1989.

In FY 1990, studies of mineral potential in areas of northwest Montana and northern Nevada were completed in cooperation with the U.S. Geological Survey (USGS), the FS and BLM. The studies were also used as opportunities to transfer appropriate assessment methodologies to the Bureau's field centers.

Proposed Work in FY 1991:

Quantitative economic analyses will become a more integral element in mineral land assessment activities. This development will involve a joint effort with the USGS, Federal land management agencies, and affected states. The quantitative techniques tested in potential supply studies integrate geologic knowledge, engineering expertise, land-use restraint information, and economic assumptions to estimate the economic consequences of alternative land-use decisions. Such information is not presently available to land-use planners.

ILURP Studies. Work on regional studies for eastern Montana, California, and other states will begin. Work will continue on the Utah and Wyoming statewide studies. A potential supply analysis for selected regions may then be conducted to further support Federal land-use decisionmaking.

Potential Supply Analysis. Coordination with the USGS and FS and BLM will continue.

Strategic and Critical Minerals Assessments: This program subelement provides quantitative assessments that identify the costs of mineral supply disruptions and the effectiveness of policy options for minimizing the Nation's vulnerability to such disruptions.

Progress in FY 1990 and Prior Years:

A Bureau analysis estimated the direct economic impacts of a U.S. import embargo on strategic and critical minerals produced in South Africa. This analysis, which was conducted at the request of the State Department, was used to assist the Administration and Congress in determining the economic impacts of a successful U.S. embargo of South African strategic and critical materials. The estimates were used in the congressional debate over amendments to the Comprehensive Anti-Apartheid Act of 1986. At the request of the Chairman of the House Energy and Commerce Committee, the Bureau conducted a follow-on study to estimate the impact that a successful U.S. embargo on South African platinum-group metals would have on employment and the Gross National Product. In addition, an assessment of materials that have experienced a significant growth in demand and reduced domestic availability was completed and distributed to Congress, Federal agencies, and the public. This type of assessment provides an early-warning system for situations in which the disruption of imported materials supplies could adversely affect the Nation.

In FY 1989 and FY 1990, the Bureau studied market factors and policy options in cooperation with the Department of State. This work was pursuant to Section 504(b) of the Comprehensive Anti-Apartheid Act of 1986. U.S. dependency on South Africa for 11 key materials were analyzed and policy options to reduce this dependency were identified (e.g., the development of secure foreign supplies and research on technologies for the substitution and conservation of strategic and critical materials).

Proposed Work in FY 1991:

The assessment of research and development activities related to strategic and critical materials and the monitoring of potentially critical materials will continue. It is anticipated that one or more strategic and critical material studies will be conducted in response to Congressional and Executive agency requests.

Technology Transfer and Clean Technologies: This program subelement seeks to accelerate the transfer of clean technologies (any technical measures taken to reduce waste generation) to medium-and small-size domestic mineral firms to improve their competitiveness and reduce the environmental impact of their operations.

Progress in FY 1990 and Prior Years:

Clean technologies currently available for the primary copper, lead, and zinc industries were identified. A preliminary case study on the lead industry examined the economic feasibility of adopting the best available clean technologies. In FY 1990, analysts began examining the implications of waste prevention. A National Academy of Sciences study identified new technologies and government technology transfer activities that could improve mineral industry productivity.

Proposed Work in FY 1991:

The Bureau will establish a waste information exchange system which will help link waste generators with potential users and converters of waste materials.

Analytic Tool Development and Recurring Publications: This program subelement involves the development of analytical systems and information bases to support timely and effective analyses, and the publication of specific recurring reports.

Progress in FY 1990 and Prior Years:

In FY 1989 a system developed to assess the comparative costs incurred by U.S. and foreign copper producers was enhanced to enable the Bureau to evaluate the economic impact of proposed regulations for mining and mineral processing wastes. A comparative cost system was also developed for the iron and steel industry to allow a broader array of assessments. The Bureau began working with the USGS to develop Geographic Information System technology for enhanced analysis of minerals data. The development of standard indices for indicating the economic health of the mineral industry also began in FY 1989.

The Annual Report of the Secretary of the Interior to Congress, in compliance with the Mining and Minerals Policy Act of 1970, was published each year. In 1990 *Minerals and Materials*, a bimonthly publication with articles on key mineral issues, was renamed *Minerals Today* and expanded to provide more indepth analysis. *Minerals Issues*, an annual review of major mineral issues and their implications for the Administration and Congress, was published in FY 1987 and subsequent years.

Proposed Work in FY 1991:

The enhancement of analytic systems that support the estimation of the cost and economic impact of waste management regulations will continue for several mining and mineral processing sectors. Academic outreach, conferences, and training will help the Bureau improve mineral analysis methodologies developed in prior years. The Academic Outreach Program will award several student fellowships for policy analyses/methodology development during the summer of FY 1991. The *Annual Report of the Secretary*, *Minerals Today*, and *Minerals Issues* will be published in FY 1991.

The Bureau will accelerate the development of Geographic Information System technology. Training and equipment will be provided at the Bureau's Washington headquarters and at its three field operations centers to establish the system as a key tool for analysis of land assessment data developed by Bureau programs, the USGS, and land management agencies. The completed system will permit the rapid retrieval, integration, and display of information concerning the location, accessibility, and economic significance of mineral resources in the United States.

Outyear Plans:

Policy Analysis program activities for FY 1992 and future years will continue to center on international competitiveness; finance and trade assessments; regulatory analyses; advanced material analyses; public lands and mineral activity analyses; strategic and critical materials assessments; technology transfer and clean technologies; and analytic tool development and recurring publications. However, increased emphasis will be placed on regulatory analyses and international studies needed to support Congress and decisionmakers in the public and private sectors.

The only activity in the Policy Analysis program that has a specific termination date is the ILURP effort. ILURP studies for Utah and Wyoming and regional studies for eastern Montana and California will be completed in FY 1992. Regional ILURP studies for selected regions in the West will begin in FY 1992 and FY 1993 and be completed the following year.

In Policy Analysis, the mix of projects changes from year-to-year. Analyses of the cost and economic impact of proposed mine waste regulations under the Resource Conservation and Recovery Act will be undertaken in FY 1992 and FY 1993. Studies analyzing the mineral sector costs of Federal and State clean air regulations will continue. The initiative that analyzes alternative mechanisms for achieving environmental quality and economic efficiency and examines the impact of environmental regulations on secondary minerals recovery and materials recycling will continue in FY 1992 and FY 1993.

INCREASE FOR FY 1991:

(Dollar Amounts in Thousands)

		FY 1991 Base	FY 1991 Estimate	Change
Policy Analysis	$	4,980	5,830	850
	(FTE-T)	(62)	(62)	(---)

Geographic Information System: This program increase will introduce a geographic information system as the principal tool for presenting data and information in all Bureau land assessment programs. The system will be designed to retrieve, integrate, and display data concerning the location, accessibility, and economic significance of mineral resources. An advanced prototype for one to three selected regions will be installed at the Mineral Information Office in the Department of the Interior building for use and testing. The system will then be installed at the Bureau's field operations centers to begin the process of entering accumulated data and new information. The program increase for this work is $750 thousand.

Regulatory Analysis Program: Regulations impose major compliance costs on the U.S. mineral industry and adversely affect its competitive position vis-a-vis foreign producers. This program increase will expand the Bureau's activity to inform Federal and State authorities about the costs and benefits of regulatory options, and enable decisionmakers to select the most cost-effective alternative. Emphasis will be placed on the design of environmental policies that utilize market incentives to reduce pollution while maintaining a strong domestic minerals and materials industry. Specific studies will include economic assessments of proposed Clean Air Act amendments and new Federal and State mine waste programs under the Resource Conservation and Recovery Act. A second series of analyses will examine the regulation of secondary recovery and materials recycling. A program increase of $100 thousand is required for this work.

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RESOURCE EVALUATION

Resource Evaluation is divided into two program areas:

- o Minerals Availability
- o Land Assessments

MINERALS AVAILABILITY

OVERVIEW: The Minerals Availability Program provides continued engineering and cost assessments of mineral production capability. It determines the size of known mineral resources, the cost of extracting those minerals, and their potential competitiveness in international markets. The information derived from this work is stored in a computerized data base–the Minerals Availability System (MAS)–which supports the preparation of "availability/supply" analyses and other special analytical mineral studies.

Availability/supply reports are studies of specific minerals which identify the domestic and international mines and plants that supply them, measure amounts and costs of material that can be produced, and apply engineering-cost appraisals to supply issues. Topics for special studies include the effect of environmental and health and safety regulations on domestic mineral producers, the international competitiveness and recoverability of domestic coal reserves, the significance of secondary suppliers of certain metals, and the growth of nonmineral materials as alternate feedstocks for manufacturing industrial and consumer goods.

The Minerals Availability Program includes evaluations of more than 3,000 mines and mineral processing plants throughout the world. It has gained national and international recognition as a principal source of mineral supply information. Publications produced through the Minerals Availability Program receive wide circulation in this country and abroad. The program receives requests for analysis from other Bureau divisions, Federal and State agencies, and private concerns. Recent work includes determination of appropriate mitigation measures at minerals-related Superfund sites for the Environmental Protection Agency (EPA), assistance to the Nuclear Regulatory Commission in ongoing evaluations of potential sites for high-level nuclear waste disposal, and cost comparisons of U.S. and foreign coal production for Congress.

PROBLEM: The ability of the United States' industrial base to meet domestic material needs is changing under the pressures of foreign competition, materials substitution, and regulatory requirements. Advances in process technologies and product designs have eroded the conventional separation of uses between mineral and synthetic materials. The impact of these pressures on the supply of minerals and materials cannot be measured without reliable assessments of mineral availabilities, recoverabilities, and production costs as well as evaluations of complete material cycles. Such assessments and evaluations depend upon integration and analysis of geologic, engineering, cost and economic information.

Minerals Availability Program addresses the following basic issues:

- o The availability and competitiveness of U.S. and foreign mineral resources, their timely recoverability, and attendant impediments to their supply.
- o The competitive significance for the domestic mineral industry of proposed or existing regulations.
- o The long-term causes and effects of changes in traditional domestic mineral industries.

Minerals Availability Program Subelements:

- o Reserve Base Development
- o Supply Analysis
- o Materials Competition and Disposal

PROGRAM:

Reserve Base Development

This program subelement develops and maintains basic geologic, engineering, production cost and economic data for over 30 commodities on more than 3,000 major mines and minerals processing plants throughout the world. The data supports minerals availability/competitiveness studies, mineral issue sensitivity analyses and public data inquiries, and comprises the MAS data base.

Progress in FY 1990 and Prior Years:

Site specific inventory and evaluation. In recent years, domestic studies included economic feasibility evaluations of gold deposits in the Western U.S., reevaluations of copper mines and an assessment of significant, newly discovered cobalt resources in Montana. Recent data development for foreign deposits has been on chromium, tin, copper, nickel and on metals with advanced materials applications such as rare earths, columbium and tantalum.

Additionally, MAS has been moved from the Bureau's main frame computer in Denver to a minicomputer in Twin Cities with a corresponding software conversion. The utility of the MAS data base and analytic systems has been improved by the incorporation of new data manipulation techniques (like geographic information systems) and the introduction of modifications that increase the analytical community's access to Bureau data. These improvements have created new applications for this unique body of mineral information.

Coal. Prototype assessments of 7.5 minute map quadrangles in eastern Kentucky, West Virginia, and Virginia have been completed to identify the recoverable portion of the local coal resource estimates made by the USGS. The goal of this activity is to determine the ultimate coal recoveries and associated costs for mining activities in specific coal-dependent regions. It will provide realistic estimates of how much coal can eventually be produced from U.S. resources.

Offshore mineral leasing. The Bureau has worked with the Mineral Management Service (MMS) and joint Federal/State task forces established by the Secretary of the Interior and State governors to assess mineral resources in the U.S. Exclusive Economic Zone. This work included a cooperative study with the state of Oregon evaluating potential heavy minerals (ilmenite, chromite, zircon, and gold) off the Pacific coast; study of the potential of cobalt-rich manganese crusts; and support for MMS in developing an offshore lease offering for gold off Alaska.

State strategic and critical mineral reports. Four state reports, of a planned report series covering 15 states, have been published. A report covering important mineral deposits and development factors in Idaho, and responsive to congressional direction, has been published as a special report (1990). Reports begun or underway in FY 1990 were for Arizona, California, Montana and New Mexico. This report series provides information on important mineral deposits and discusses the regional factors and history associated with mining in each state.

Proposed Work in FY 1991:

Site specific inventory and evaluation. Emphasis will continue to be placed on evaluating significant U.S. and international mineral producers to maintain MAS (reserve base information) as a viable policy analysis tool and an up-to-date information source. This baseline information supports international availability and competitiveness studies, analyses of regulatory compliance and costs, and a variety of government and public needs for mineral production cost information. The Bureau obtains information on foreign deposits through its long-standing membership in the International Strategic Minerals Inventory (ISMI) group, State Department Foreign Service Personnel (the Bureau conducts formal orientations for Regional Resource Officers on the minerals industry and in collecting mineral industry information), bilateral agreements with foreign governments and through visits of program evaluators to foreign mines and processing/manufacturing plants. This activity ensures that the MAS data base remains capable of supporting competitive analyses and policy studies (such as sanctions on the import of minerals from South Africa) and is consistent with the President's National Minerals and Materials Program Plan (1982) and the National Materials and Minerals Policy, Research and Development Act of 1980 which charge the Federal government to improve its foreign minerals data.

Coal. Additional 7.5 minute map quadrangles in the Appalachian coal region and a prototype area in the Midwest will be assessed with respect to coal production recoverability and costs. The objective of this work is to develop estimates of the national coal reserve base (the amount of U.S. coal that is technically and economically recoverable) that are more realistic than current estimates of total coal. More realistic and accurate assessments are important to the consideration of regulations affecting coal production and to the direction of research aimed at maximizing recovery and ensuring environmental protection. The Bureau and USGS have a closely integrated program where the USGS provides baseline geological and environmental restriction information and maps to which the Bureau applies engineering recovery and cost analyses. Existing cost analysis expertise, coal reserve base data and automated data storage and manipulation systems give the Bureau a unique capability to rapidly and systematically apply recoverability and cost factors to the map quadrangle assessments of coal availability provided by the USGS. This activity addresses concerns expressed before Congress about inadequacies in the U.S. national coal reserve base data base.

Offshore mineral leasing. Cooperative work with the MMS on marine minerals will continue. The Bureau remains committed to advancing the development of marine deposits as an alternate source of supply to meet the Nation's mineral requirements.

State strategic and critical mineral reports. Work will continue on preparing reports for California, New Mexico, Colorado and Utah. This report series (planned to encompass 15 states) is intended to educate the lay public on mining issues as well as to present salient availability information to minerals professionals. This report series draws heavily on data resident in the MAS and MILS (Mineral Industry Location System) data bases, but includes narrative discussions of state mining history, and of the regional infrastructural and institutional factors that influence mining in a state. A goal is to help ensure balance and accuracy in environmental/development dialogs.

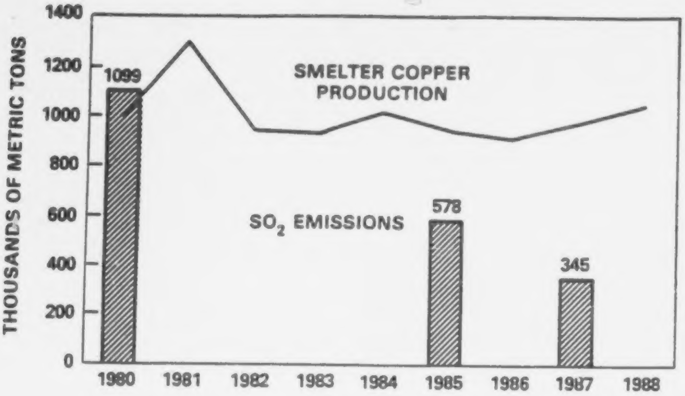
Mineral Industry Location System (MILS). After a hiatus of several years, the MILS data base will be incrementally updated on an annual basis beginning in FY 1991. MILS contains identification, commodity, operational status data, etc., on approximately 200,000 U.S. raw mineral prospects, producing mines, past producers and mineral processing plants. As such it is the most comprehensive Federal or private data base on identified mineral locations and consequently is one of the most heavily used Bureau data bases. It is used by land planners in other Federal and State agencies and by the industry in mineral exploration. It provides the basic data to fulfill Federal responsibilities with respect to analyses of the impacts of land withdrawals on minerals availability (recently in studies of the California Desert Conservation Area and land use restraints inventory), and in reviews of environmental impact studies. Since updating of this data base has been postponed several years, new mineral locations need to be entered and certain data elements of old entries updated.

Supply Analysis

This program subelement defines supply/cost relationships for individual mineral commodities, and identifies the critical influences on patterns of production. Analyses address operational and engineering factors specific to individual mines, the impact of governmental regulations on these producers, and the anticipated effect of near-term technological advances. Although the reserve base development subelement provides baseline information and expertise, these analyses have additional data and analytic systems (e.g., network models) requirements.

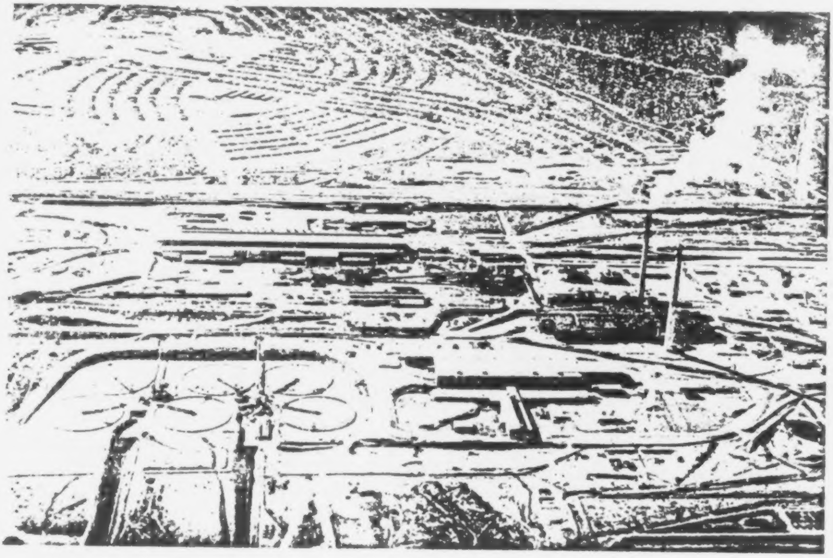
Progress in FY 1990 and in Previous Years:

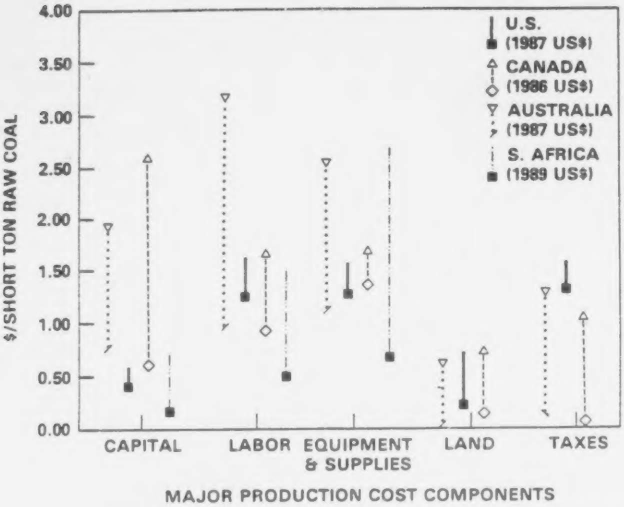
Commodity analysis. Each mineral commodity is periodically reassessed to highlight changes in the determinants of supply. Reports were recently completed on phosphate, chromium, cobalt, copper, manganese, and nickel. Preliminary work was started on analyses of aluminum, lead/zinc, platinum, tin, and tungsten.



U.S. PRIMARY COPPER SMELTERS ARE REDUCING THEIR LEVELS OF SO$_2$ EMISSIONS

In 1987, U.S. copper smelters cut SO2 emissions by 0.7 million tons from 1980 while maintaining essentially the same production levels. Technology retrofits in progress should reduce emissions further to 0.2 million tons in 1991.





COST RANGES

Selected Large Surface Coal Mines

The minerals availability system pinpoints competitive differences between U.S. and foreign mineral producers.

Paintearth Mine, Alberta, Canada

BOM-45

Regulatory Projects. Studies of the regulatory costs imposed upon mineral producers have become increasingly important with respect to the President's initiative on the environment. The purpose of such analyses is to determine how these additional costs affect the competitiveness of domestically produced minerals traded in international markets. Studies have been completed for the lead, copper, phosphate, and gold industries. The copper study, which identified controlling sulfur dioxide emissions at the smelter as having the greatest regulatory cost impact on the industry, showed that such controls cost about 7.5 cents per pound of copper produced and that the industry has reduced sulfur dioxide emissions dramatically since 1980. Work has also been completed on determining the impact of permitting procedures and environmental constraints on mining in Alaska, and assessing the indirect effects of proposed acid rain legislation on specific sectors of the mining industry. (Such legislation is expected to raise the cost of producing electricity in this country; utility companies will pass on those costs to their customers, including mineral producers.)

The Bureau assisted the EPA in the assessment of mitigation measures for minerals-related Superfund sites by investigating potential hazards and appropriate corrective actions and studying mine bonding and remediation costs. Also, to have direct input into regulatory actions that will affect the mining industry, the Bureau detailed a mining engineer to the EPA, Region VIII, to help develop Federal Mine Waste Regulations that must be in place by 1992.

Coal. At the request of Congress, the Bureau and the Department of Commerce produced a series of studies comparing costs incurred at selected domestic and foreign coal mines. Special attention was given to the investigation of regulatory cost differences between U.S. and foreign coal producers and the effect those differences have on relative production costs. In the studies comparing U.S. costs with those of Colombian, Canadian, Australian, and South African coal producers, the Bureau found that taxes were the only consistent source of U.S. cost disadvantages.

Technical assistance. Special short-term studies of specific mineral topics are often requested by other agencies. A recent analysis for the U.S. Army Corps of Engineers determined that additional phosphate production, which would be supported by increasing the depth of shipping channels in North Carolina, was justified in light of existing and near-term phosphate supply and demand. An analysis of the potential impact of successful borehole mining research on the competitiveness of the domestic phosphate industry was prepared for the Bureau's Research Directorate. Assistance was also provided to the USGS in an economic study of the Al Jalamid phosphate complex in Saudi Arabia.

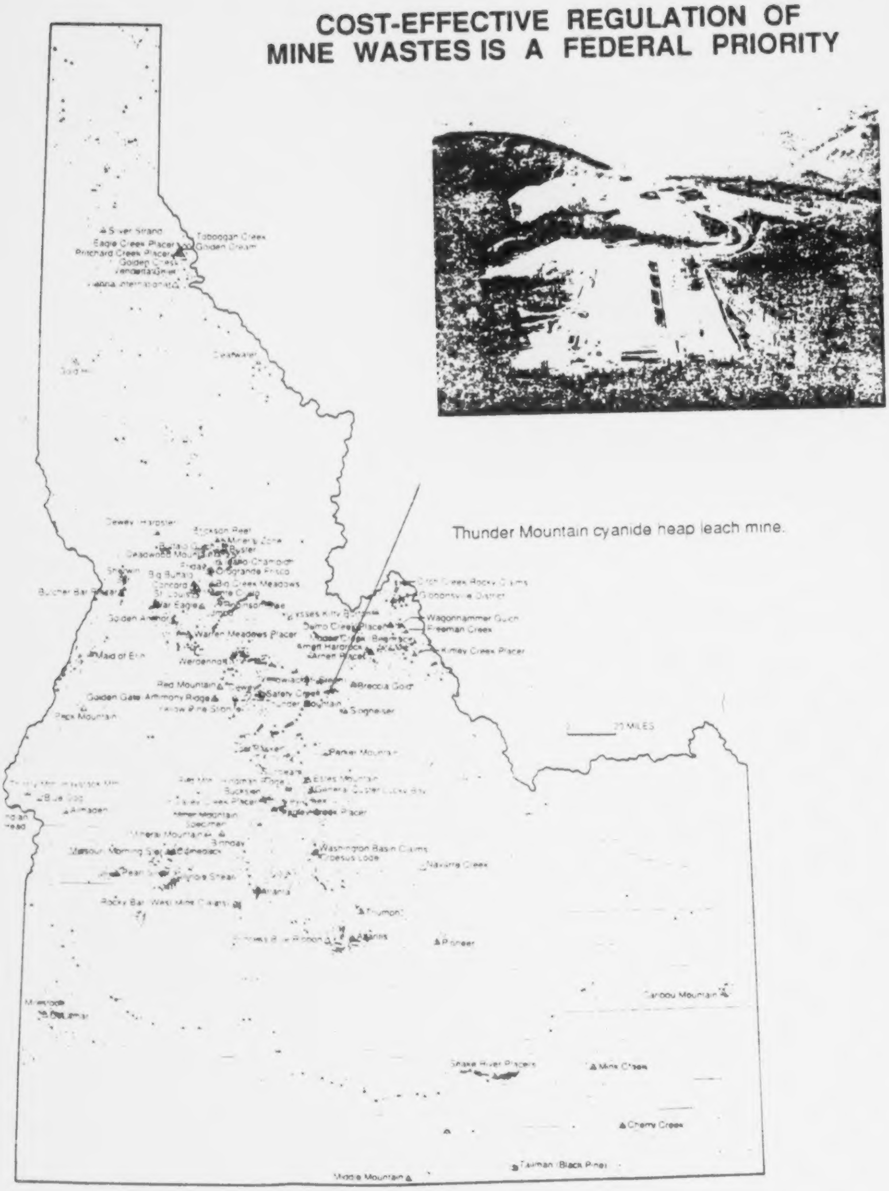
Proposed Work in FY 1991:

Commodity analysis. The Bureau will complete commodity availability/supply studies for aluminum, lead/zinc, platinum, tin, and tungsten. In preparation for similar analyses in FY 1992, data will be verified and analyzed on U.S. and foreign producers of fluorspar, rare-earth oxides, silver, and titanium. These are mineral commodities for which previous analyses are dated and some are significant because of rapidly developing advance material applications. Updated supply curves for mining and--where appropriate--processing will be prepared for aluminum, chromium, copper, manganese, nickel, and phosphate for annual reporting in Bureau publications. Industrial mineral analyses will focus on the impact of environmental and zoning regulations, permitting requirements, tax laws, and alternative sources on the cost and supply of cement and aggregates in selected regions.

Regulatory projects. New work in this area will estimate the costs of possible compliance measures associated with critical environmental regulations stemming from the President's initiative on the environment. Data on the volume, locations, characteristics, and control costs associated with mine waste will be compiled to assist in the development of regulations in this area. The Bureau will use this data base to assess the costs and effectiveness of alternative compliance measures at various sites.

Another new project will examine selected Superfund sites to identify sampling, assessment, and remediation procedures appropriate to the unique conditions found at mineral-related sites. A handbook for guiding those charged with setting remediation bonds to ensure cleanup of mining sites will be published.

COST-EFFECTIVE REGULATION OF MINE WASTES IS A FEDERAL PRIORITY


Silver Strand
Eagle Creek Placer
Pritchard Creek Placer
Golden Chest
Toboggan Creek
Golden Cream
Clearwater
Dewey
Buffalo Gulch
Deadwood Mountain
Big Buffalo
Concord
St. Louis
War Eagle
Golden Anchor
Butcher Bar Placer
Big Creek Meadows
Warren Meadows Placer
Maid of Erin
Red Mountain
Golden Gate
Antimony Ridge
Peck Mountain
Thunder Mountain
Safety Creek
Breccia Gold
Siogneiser
Gibbonsville District
Wagonhammer Gulch
Freeman Creek
Kirtley Creek Placer
Amen Placer
Parker Mountain
Estes Mountain
General Custer
Blue Dog
Almaden
Buckskin
Specimen
Mineral Mountain
Birthday
Washington Basin Claims
Croesus Lode
Navarre Creek
Rocky Bar
Triumph
Atlantis
Pioneer
Caribou Mountain
Snake River Placers
Mine Creek
Cherry Creek
Tallman (Black Pine)
Middle Mountain
25 MILES

Thunder Mountain cyanide heap leach mine.

Cost analyses determine the impacts of alternative mine waste controls on U.S. minerals availability and competiveness.

BOM-47

During the next several years, the EPA plans to develop additional rules under the Resource Conservation and Recovery Act (RCRA) to deal with mine and mineral processing wastes. The Bureau will quantify the costs of proposed regulations and estimate the economic impacts of alternative methods for handling mineral wastes. Possible compliance measures will be assessed on a site-specific basis because costs and resulting economic importance vary greatly between sites and industry sectors. This work will help decisionmakers identify cost-effective rulemaking and implementation options. In addition, the Bureau will examine the effectiveness of alternative technology transfer and technical assistance approaches to select the best ways to inform the mineral industry concerning available waste management technologies. The goal of this effort is to encourage U.S. mineral producers to adopt practical compliance measures.

Coal. In support of a Congressional mandate to identify and analyze factors affecting the competitiveness of U.S. coal, analyses based on the comparison of cost structures at domestic coal mines with those in the European Economic Community countries will continue. In addition, the Bureau will begin collecting information on the key factors that influence export coal production from China, the Soviet Union, and Poland. The Bureau will also assist the Department of Commerce in assessing the significance of subsidies in major coal exporting countries.

Technical assistance. Besides responding to new requests for assistance, the Bureau will continue working with the EPA to assess the levels of mineral-related contamination at Superfund sites. Analysts will compile information on problems associated with wastes at abandoned mine sites to help land planners. A new project will develop more effective ways to disseminate information about available techniques for managing mineral wastes to the domestic mineral industry.

Materials Competition and Disposal

This program sub-element responds to the emergence of alternative materials as a major influence in mineral markets. Rapid advances in materials technologies are spurring inter-materials competition of which one result is declining metal intensity in traditional metals-based products. Much of the interest in advanced materials lies in their potential to displace traditional basic materials in large volume applications. Traditional industry competitive analysis involves the determination of productivities, and production and transportation cost advantages/disadvantages relative to foreign competitors. When only one material can satisfy performance requirements, the availability and cost of raw materials are the determining factors in choosing between suppliers. When the choice is between materials cost tradeoffs exist in intermediate product stages, i.e., fabrication, manufacturing, recycling, etc., resulting in cost differences in final products. Assessing these ultimate costs requires integrating analysis of materials supply with analysis of fabrication as well as in use considerations over various product life cycles (including disposal).

Progress in FY 1990 and Prior Years:

Life-cycle analysis. The Bureau has developed a series of process costing models for materials fabrication and use. Working with these models and existing systems that evaluate feedstock costs, analysts compared the costs of alternative materials that are able to satisfy specified performance criteria. Materials studies have been completed for parts of the packaging, transportation, and construction industries.

Three studies focused on portions of the packaging industry in which metals compete with less traditional materials. Topics studied include beverage containers, aseptic packaging, and shipping pallet manufacture. In each instance, classic minerals-based materials compete with less traditional materials for product market dominance. In some instances--for example, beverage containers--traditional materials appear likely to remain firmly in the lead. In other cases (aseptic packaging, for example), less traditional materials have almost entirely supplanted the previously used material.

The automobile industry, one of the largest users of materials in our society, has been a substantial consumer of metals and other mineral products. Increasingly, however, plastics and other materials are replacing steel and aluminum in automobile manufacture. The Bureau began analyzing the shift in materials contained in selected automobile components. In addition to evaluating alternative materials used for automobile trim, the Bureau also studied material alternatives for automobile interior and under-the-hood applications.

Construction industry analyses focused on life cycle studies of alternative piping materials. This work explained why piping made from metals has been supplanted by plastic pipe in virtually all construction applications.

Proposed Work in FY 1991:

Life-cycle analysis. In recognition of the continued evolution of the materials required by manufacturers and the impacts of these changes on the mineral industry, the Bureau will continue the manufacturing product "life cycle" studies to identify the market opportunities and challenges facing mineral producers today. Each of these studies identifies the materials competing for selected markets, the various processing stages in the life cycle of each, the important criteria that influence the selection of one material over another, the product level at which these criteria are manifested, and the implications of the material choices made for the principal market components of the industry involved. Life-cycle study coverage of competing materials will be expanded to include additional areas within the three broad product markets (packaging, transportation, construction) already under study. Analysis of a fourth area--electrical products will begin. An initial report on materials applications will interpret the materials shifts found in the automobile and other transportation industries. Implications for the future materials needs of the transportation sector will be featured.

The long-term purpose of this methodology development is to predict cost driven materials substitution trends with accuracy. This information will provide the necessary context for addressing issues such as whether short-term objectives such as import restrictions are achieved at the cost of long-term erosion of material market share, whether technical changes altered shortage vulnerabilities and thus stockpile needs, etc. It is information that is critical to policymakers considering restrictions on materials use and impacts of trade legislation.

Direct mineral consumer reports. The Bureau will also prepare a prototype for a new series of reports on volumes, sources, and costs for the various commodities consumed in selected raw materials-using industries. These Direct Mineral Consumer Reports will tailor information on minerals and alternative commodities to the needs of materials-consuming rather than producing industries. Part of this activity will involve combining newly developed information with traditional Bureau data in a computerized data base. The data base format will allow the Bureau to expand its monitoring activities in the materials field and maintain critical supply and production parameters for materials already under study.

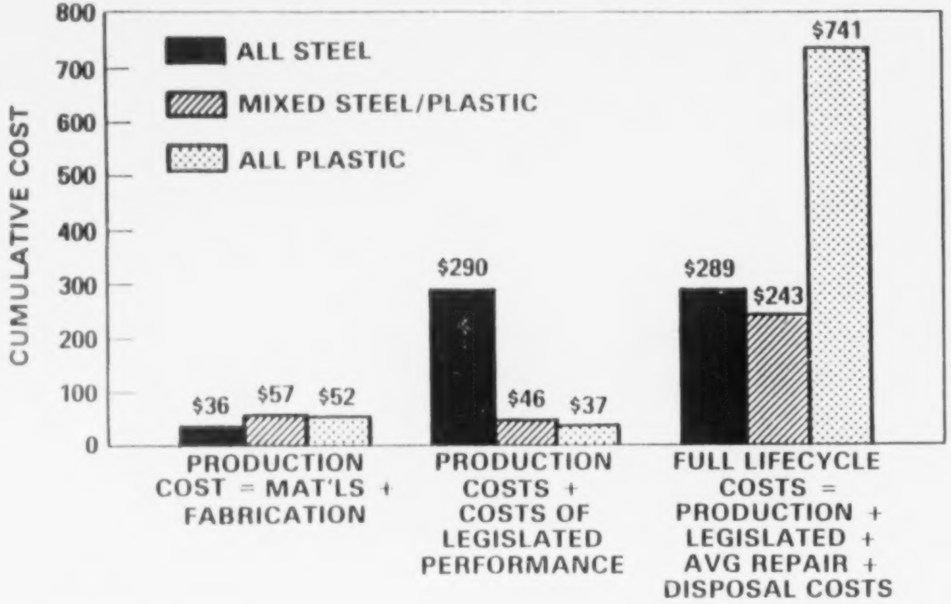
Outyear Plans:

The core of the Minerals Availability Program consists of ongoing, multiyear activities, such as recurring commodity reports, updating data and analytical systems, and short-term analyses of national issues or in support of other government agencies. These activities are critical to the Bureau's ability to provide convincing economic arguments in behalf of the competitiveness of domestic mineral producers and to predict the availability of mineral supplies.

Program activities in this subactivity that will decline in outyears are the state mineral inventories (a onetime report series).

Program activities that have future growth implications include the coal assessments and analyses of materials competition. The coal activities were undertaken in response to requests from the Department of Commerce and the USGS to participate in congressionally requested studies of subsidies of international export coal producers and of domestic coal reserve base estimates. The degree of support provided is constrained by available resources.

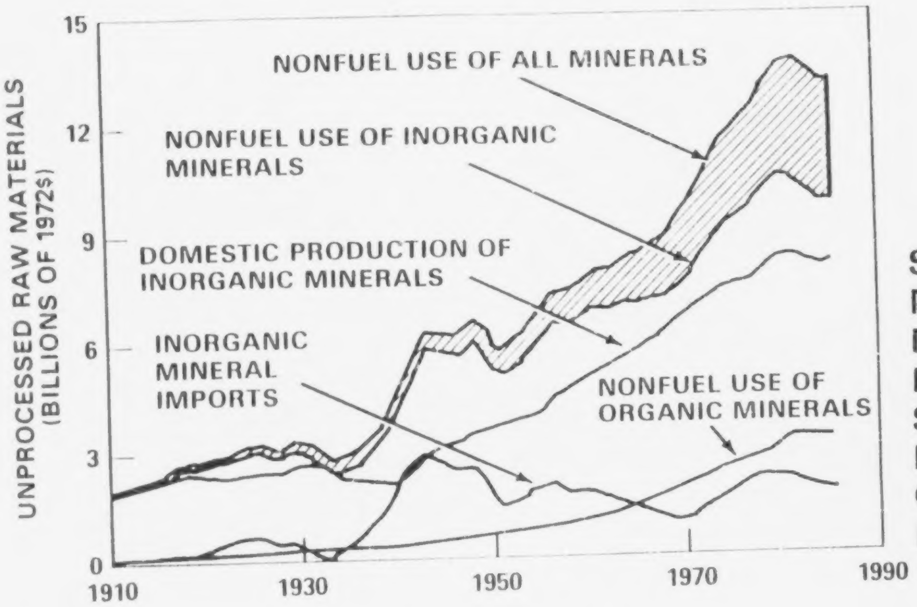
The Bureau has been investigating the significance of materials competition, particularly of the increasing substitution of organic materials (such as plastics), for traditional metals uses, through a series of life cycle studies since 1988. Although the exact role of the Bureau and the degree to which it will be



COSTS OF ALTERNATIVE BUMPER SYSTEMS VARY ACCORDING TO DECISION OPPORTUNITY

Lifecycle cost analysis of alternative materials (mine production through end-product disposal) help to make efficient materials selection choices

BOM-51



SOCIETY'S USE OF NONRENEWABLE MATERIALS HAS BEEN GRADUALLY SHIFTING FROM INORGANIC TO ORGANIC MINERALS

Nonfuel, raw materials use of oil, gas, and coal (plastics, asphalt, organic chemicals) is now more significant than imports of conventional metallic, nonmetallic and industrial minerals as a source of competition to the U.S. mining industry.

involved in analyzing and reporting materials applications are still under consideration, assumption of continued involvement in this area will require additional resources.

INCREASE FOR FY 1991:

(Dollar Amounts in Thousands)

		FY 1991 Base	FY 1991 Estimate	Change
Minerals Availability	$	7,001	7,101	100
	(FTE-T)	(108)	(108)	(--)

As part of Supply Analysis, data will be collected to analyze elements and materials potentially available from mineral waste streams and sites. This secondary source of materials, many of which could be vital to advanced technology applications, are affected by regulations covering the solid wastes generated by the minerals industry now being developed under the Resource Conservation and Recovery Act (RCRA). This increase augments environmental regulatory base activities in keeping with the President's initiative on the environment.

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LAND ASSESSMENTS

OVERVIEW: The Bureau's Land Assessment program provides reliable and comprehensive mineral resource information that supports land management decisions by the Congress and Federal land management agencies. This information also provides the basis for decisions that would expand the domestic supply of important mineral resources, primarily strategic and critical minerals. Much of this work is done jointly with the USGS.

Most of the Bureau's past land assessment activities, including the Forest Service (FS) wilderness and roadless area studies and the Bureau of Land Management (BLM) wilderness studies, responded to legislation relating to proposed land withdrawals. In recent years, the land assessment program has focused on developing mineral resource information for use in multi-purpose land planning. The Bureau is working to ensure that minerals are considered in the Federal land-planning process.

Studies under the Alaska Strategic and Critical Minerals Initiative locate and assess the resource development potential of minerals in Alaska. Work under this Initiative will intensify and expand the ongoing work in Alaska to evaluate not only the current strategic and critical minerals, but also those minerals emerging in importance due to new technology and advanced material demands. Studies will concentrate on geologic terranes that have extensions into Canada and the Soviet Union where exploration and development far exceeds that in the same terranes in Alaska. This work provides timely, comprehensive data that can help State and Federal agencies make well-informed economic, policy, and land-use decisions, and encourages industry involvement in mineral development by identifying target areas for economic deposits. The Initiative's goals are accomplished through the expanded Mining District Studies and Site-Specific Mineral Investigations programs.

Land Assessment Program Activities:

- o Mineral Surveys on BLM lands
- o Mineral Surveys on FS lands
- o Mining District Studies
- o Site-Specific Mineral Investigations
- o Environmental-Related Studies

PROBLEM: If the mineral industry is to identify and develop promising new domestic mineral resources, important mineralized areas on public lands must remain open to exploration and development. Problems in planning decisions often arise because decisionmakers lack either the necessary mineral information and the resources to acquire it or the expertise to analyze minerals information and to develop alternatives that are less restrictive to mineral exploration and development. Therefore, to ensure that mineral resource development can compete with more easily identifiable alternative land uses, the Bureau represents the national interest by promoting access to minerals on public lands. The agency strives to ensure that mineral considerations are an integral part of land-use decisions.

PROGRAM:

Mineral Surveys on Bureau of Land Management Lands: The Bureau and the U.S. Geological Survey (USGS) have been conducting mineral assessments on BLM administered lands that are being considered for wilderness designation and withdrawal from mineral entry. Results of these investigations have been incorporated into joint reports to inform Congress, the BLM, and the public of the importance of minerals on BLM lands.

Progress in FY 1990 and Prior Years:

Mineral surveys were conducted on wilderness study areas recommended as suitable for wilderness by the BLM. These surveys will become part of final wilderness recommendations developed by BLM for submission to the President and Congress. Since the program began in FY 1978, the BLM has requested mineral surveys on over 13.3 million acres of wilderness study areas. The Bureau has completed open-file reports and joint reports for this acreage, and has assembled mineral summaries for congressional staff that provide mineral information for areas that may be included in pending wilderness bills for California, Idaho, Arizona, Utah, Nevada and New Mexico.

Proposed Work in FY 1991:

The Bureau will continue to assemble mineral summaries for Wyoming, Colorado, Montana, and Oregon. In cooperation with the USGS, the Bureau will conduct mineral studies for a limited number of BLM Resource Management Areas to support the BLM planning process. This program will provide mineral appraisals geared to the BLM planning cycle, estimate the economics of mining and processing identified resources, and provide advisory services to BLM planners.

The Bureau and the USGS also propose to expand the USGS' Conterminous United States Minerals Assessment Program (CUSMAP) by including Bureau-identified mineral resource data, engineering cost data, and mineral economic analyses. The CUSMAP program systematically examines the mineral potential of the United States and produces a national mineral data base for use by government agencies, academic institutions, industry, and the public. The Bureau's contribution will be to relate mineral resource assessments to mineral prices, marketing prospects, and extraction costs. The Bureau will participate in work on CUSMAP areas that will be selected on the basis of importance and knowledge of minerals in the regions.

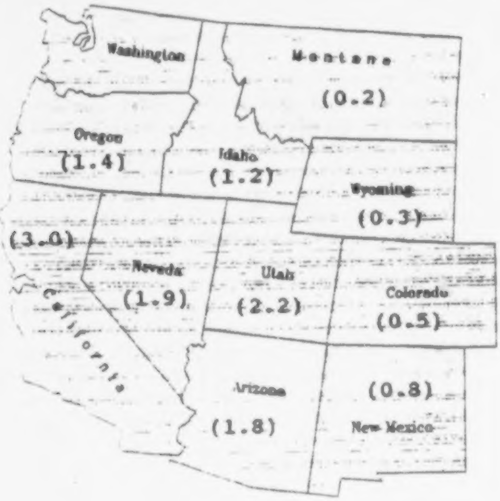
Mineral Surveys on Forest Service Lands: In 1987, the Bureau, USGS, and the FS signed an interagency agreement that sets policy for conducting mineral resource surveys on FS lands. These surveys are needed to develop mineral information for use in forest-wide land-use plans. Under this agreement the Bureau takes the lead in:

- o Inventorying historic and current mineral activity.
- o Appraising the economics of both identified mineral resources and mineral resources for which a statistical quantitative estimate is made.
- o Estimating the significance of the mineral resources and their feasibility for development.

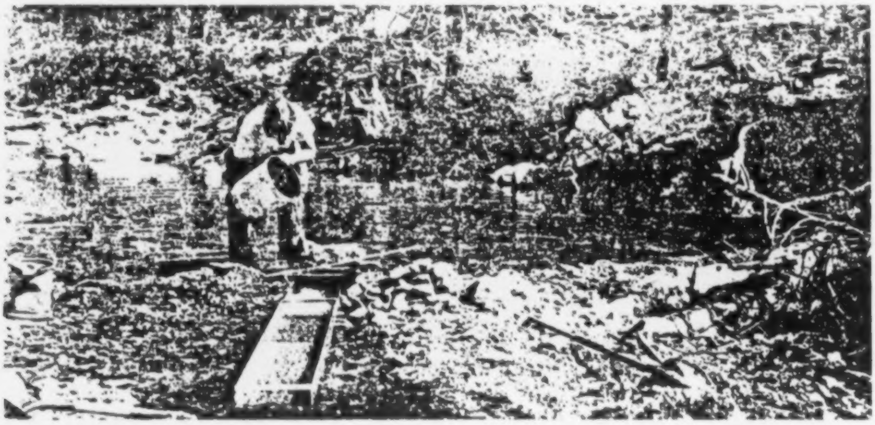
The program is designed to "improve the availability and analysis of mineral data in Federal land-use decisionmaking," as specified in the 1980 National Materials and Minerals Policy, Research and Development

WILDERNESS STUDY PROGRAM ON BUREAU OF LAND MANAGEMENT LANDS

(Millions of Acres)

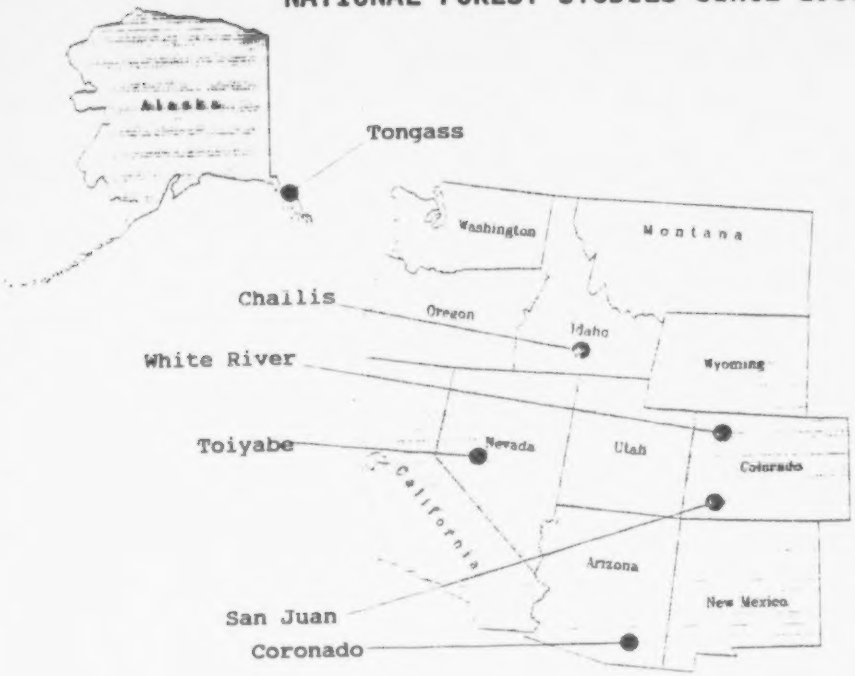

Washington
Montana
(0.2)
Oregon
(1.4)
Idaho
(1.2)
Wyoming
(0.3)
(3.0)
California
Nevada
(1.9)
Utah
(2.2)
Colorado
(0.5)
Arizona
(1.8)
(0.8)
New Mexico

Reports are part of the final wilderness recommendation package.



Sampling a stream to see if it contains gold.

NATIONAL FOREST STUDIES SINCE 1988


Alaska
Tongass
Washington
Montana
Oregon
Idaho
Wyoming
Nevada
Utah
Colorado
California
Arizona
New Mexico
Challis
White River
Toiyabe
San Juan
Coronado

Inventorying past mining operations.

Act. Regional foresters have been directed by their chief to "ensure that the results of investigations conducted by the Bureau of Mines, are utilized to the fullest extent in the Forest plans."

The Bureau also prepares mineral summary reports on pending wilderness bills for the Congress using information from these mineral surveys, studies previously conducted on FS lands, and available literature. These reports contain information on the significance of known mineral commodities in the proposed wilderness areas, as well as data on reported production, mining district locations, mines, claims, recent company activities, and mineral favorability for each area in the bills. Mineral resource information provided to the Congress has changed the wilderness classification decisions on at least 75 separate areas. Other areas were modified early in the planning process (80 in the state of Idaho alone), and wilderness proposals were either dropped from the final recommendation, or had boundaries redrawn to exclude portions with significant mineral resources or mineral potential. Keeping these mineralized lands open to future mineral exploration and development increases the future domestic supply of important mineral resources.

Progress in FY 1990 and Prior years:

The work conducted on specific forest studies since FY 1988 is summarized in the table below. First-year work consists of pre-field data collection, courthouse record searches, and perhaps limited field reconnaissance. Second-year activities mainly include field sampling and mapping of mineralized areas; field work may require more than one year to complete. The final phases of these studies consist of data compilation, data analysis, and report preparation.

Forest Service Studies, FY 1988-1991

National Forest	FY 1988	FY 1989	FY 1990	FY 1991
Challis, ID (2.5 million acres)	Field Work Data Compilation	Data Analysis Report Complete	- -	- -
White River, CO (2.0 million acres)	Field Work Data Compilation	Field Work Data Analysis Report Prep.	Report Complete	- -
Toiyabe, NV (2.6 million acres)	Pre-field	Field Work Data Compilation	Field Work Data Analysis	Field Work Data Analysis
San Juan, CO (1.9 million acres)	Pre-field	Field Work Data Compilation	Field Work Data Analysis Report Prep.	Report Complete
Tongass, AK (16.8 million acres)	- -	Data Analysis Interim Report	Final Report	- -
Coronado, AZ (1.7 million acres)	- -	Pre-field	Field Work Data Compilation	Field Work Data Analysis
Kaibab, AZ (1.6 million acres)	- -	- -	Pre-field Field Work	Data Analysis Draft Report
Shawnee, IL (0.7 million acres)	- -	- -	Pre-field Field Work	Field Work Data Analysis
One additional forest	- -	- -	Pre-field	Field Work Data Analysis
Three new forests	- -	- -	- -	Pre-field Field Work

In addition to the forest-wide studies in FY 1989, the FS requested a special study of the cumulative effects of existing and proposed mining operations within a 125,000-acre area of the Independence Range in Nevada. In FY 1990, work began on a special study of the Black Hills in South Dakota to examine the possible effects of mineral development within the forest.

In response to congressional directives, the Bureau carried out mineral assessments on roadless areas in Idaho during FY 1989 and 1990. These evaluations have provided comprehensive mineral assessments in support of Federal land-use decisionmaking. These assessments were coordinated with the USGS and the Idaho Geological Survey.

Proposed Work in FY 1991:

In addition to the forest-wide and special studies, the Administration supports continuing the important work of evaluating mineral resources in certain public lands in Idaho that may be considered for future land withdrawals as wilderness. Current mineral knowledge of these lands is insufficient for land-classification and land-use decisionmaking purposes. These studies will be conducted in conjunction with the USGS and the Idaho Geological Survey.

Forest Service Workload, FY 1989-1991
(Number of forests)

	FY 89	FY 90	FY 91
New starts	2	3	3
Additional field work	3	3	4
Total field survey	5	6	7
Reports	1	2	2
Total under study	6	8	9

Mining District Studies: The Mining District Studies in Alaska are designed to assist land management agencies in land-use decisions, and to reduce the dependency of the United States on foreign sources for strategic and critical minerals. Section 1010 (a) of the Alaska National Interest Lands Conservation Act, P.L. 96-487, states that "the Secretary shall, to the full extent of his authority, assess the oil, gas, and other mineral potential on all public lands in the State of Alaska in order to expand the data base with respect to the mineral potential of such lands." In addition, the Anti-Apartheid Act of 1986, P.L. 99-440, mandates that the U. S. is to decrease its import reliance on South African supplies of platinum-group metals, chromium, manganese, cobalt, and selected other minerals. The Mining District Studies, conducted in cooperation with the State of Alaska, provide detailed information on the identified mineral resources on Federal and State lands and the potential for their economic development. Emphasis is also placed on developing more extensive quantitative information on potentially economic mineral resources, especially of critical and strategic minerals. This type of information helps Federal policymakers, land management agencies, regulatory agencies, and the Congress make land-use and policy decisions that affect the long-term supply of domestically produced minerals.

Progress in FY 1990 and prior years:

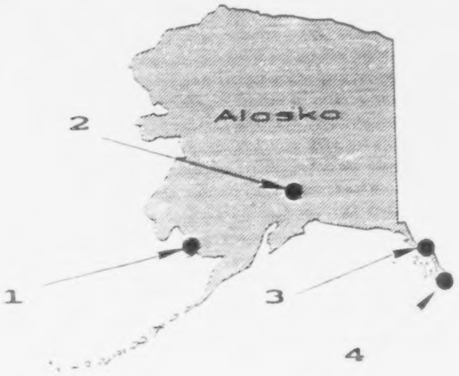
Studies are in progress or are completed on the following areas:

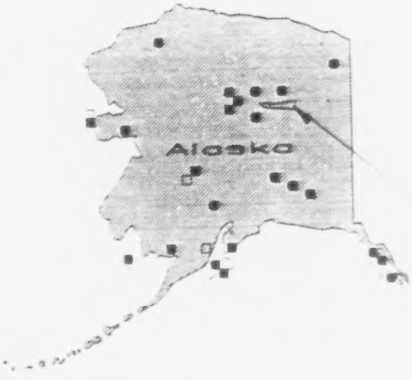
Juneau Mining District. At the request of the Congress and in cooperation with the Alaska State Division of Geological and Geophysical Surveys (ADGGS), the Bureau began this 4-year study in FY 1985. Field work was completed in four subdistricts, and in FY 1988 an analysis of undiscovered economic deposits occurring in the district was conducted. The final report was completed and published in FY 1990. Highlights from the study include:

MINERAL STUDIES IN ALASKA SINCE 1987

Mining District Studies

1. Goodnews Bay
2. Valdez Creek
3. Juneau
4. Ketchikan





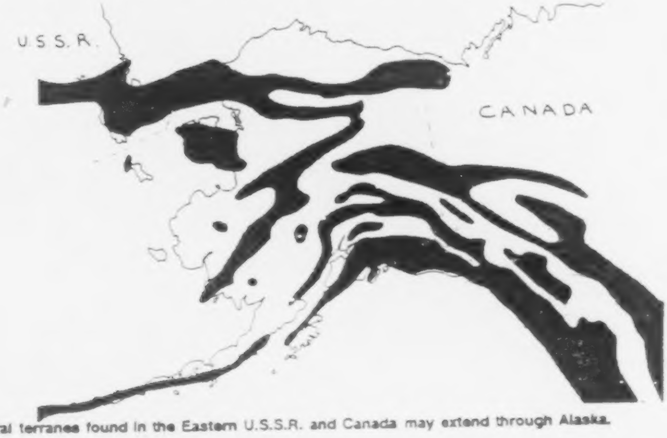
Site-Specific Mineral Investigations

- ■ 1987 - 1988
- □ 1990

White Mountain National Recreation Area and Steese Mountain National Conservation Area Study

ALASKA CONTAINS VAST UNEXPLORED MINERAL TERRANES

Figure .-- Mineral terranes have been identified from Eastern U.S.S.R. through Alaska and into central Canada. Alaskan sector terranes have not yet been developed.



Mineral terranes found in the Eastern U.S.S.R. and Canada may extend through Alaska.

Alaska offers rugged terrain where snow hides mineralization.

- o the determination of how geologic structures control a mineralized zone having potential as a large-tonnage, low-grade deposit;
- o the identification of 5 to 6 million cubic yards of placer gold occurrences in the Porcupine Mining Area;
- o the discovery of a gold-copper occurrence 3 miles south of Haines; and
- o the discovery of a gold-silver-copper occurrence 20 miles south of Haines.

The economic potential of these previously unknown occurrences has not been determined. The two discoveries south of Haines generated considerable interest. Several blocks of claims were staked at the discovery 20 miles south of Haines, and a private mining company invested a considerable effort in additional exploration.

Valdez Creek Mining District. This 5.7 million-acre district, which includes the largest producing placer gold mine in Alaska, has potential for a significant increase in mineral development. The 4-year study, begun in FY 1987, included cooperative work with the ADGGS. In FY 1988 and FY 1989, the feasibility of underground mining at the Valdez Creek placer mine was investigated. The Bureau studied a low-grade gold deposit to examine the feasibility of mining it, developed a deposit model for use in exploring for other undiscovered occurrences, and conducted geophysical examinations and subsurface sampling at sites that were previously identified as having mineral potential. In FY 1988, the Bureau discovered mineralization near the McCallie Creek glacier. FY 1989 work consisted of mapping and sampling that discovery, doing new work on areas that showed anomalous gold values in previous sampling, and examining the remote central part of the district. Final field work and a draft of the final report on the Valdez Creek District study was completed in FY 1990.

Ketchikan Mining District. In FY 1990, the Bureau began a 4-year study of the Ketchikan Mining District located at the southern tip of Southeast Alaska. Work consisted of literature and mining claims research and reconnaissance field studies. Investigations in this district were coordinated with the FS to provide information for land-use planning.

Proposed work in FY 1991:

Studies will continue on the Ketchikan Mining District. Work will concentrate on detailed investigations of deposits on Prince of Wales Island, and will include limited investigations of zinc, lead, and gold occurrences at Carroll Inlet, George Inlet, and Thorn Arm.

Investigations will begin on the Colville Mining District in northern Alaska. The first year will consist mainly of literature and claims research and reconnaissance field work. This mining district has geologic terranes that extend into the Soviet Union and Canada that may include world class mineral deposits, but it is underexplored because of its remote location and its current land-use status which prevents minerals entry by industry. Mineral information about the district will primarily support BLM in its land-use planning.

Site Specific Mineral Investigations

Progress in FY 1990 and Prior Years:

Site-specific mineral investigations provide detailed data on small areas of Federal lands that have a high potential for important minerals. The program began in 1981 in Alaska and grew out of mineral land assessment studies conducted in the 1970's that examined important metals like chromium, tin, and cobalt. By 1987 platinum, columbium, tantalum, yttrium, gallium, germanium, and rare-earth elements had been added to this relatively limited program. The Bureau conducts these investigations at widely distributed sites throughout the United States; most, however, occur in Alaska. Site selections in Alaska have been coordinated with the Bureau's metallurgical research program. Bulk samples are provided for mineral characterization and beneficiation studies at Bureau research centers.

Since FY 1985, investigations have been conducted on approximately 35 sites, mostly in Alaska. The principal commodities evaluated were platinum-group metals, chromium, cobalt, columbium, base metals, rare-earth elements, tungsten, uranium, and gold. The Bureau identified significant occurrences of chromium, massive metallic sulfides, columbium, and gold. Further evaluation is needed, however, to determine the economic potential of these occurrences.

Proposed work in FY 1991:

Studies will be undertaken on sites having a high probability of containing resources of importance to national needs, and most will be coordinated with the Bureau's research programs. Emphasis will be on current strategic and critical minerals and those minerals emerging as potentially important to new technology and advanced materials. The focus will be on potential sites within selected mineral terranes and will include sites identified by the Alaska mining district studies and by the review of previous surveys on public lands. Sites may be on public lands restricted to mineral entry. These sites normally lack the scope of information needed by land-management agencies for land-use planning, but are potentially of significant interest to the mining industry. The availability of more detailed data would encourage private industry to carry out further exploration and development activities.

Environmental-Related Studies

Progress in FY 1990 and Prior Years:

Under the National Environmental Policy Act of 1969 (NEPA), P.L. 91-190, the Bureau is responsible for assisting other agencies in resolving mineral issues associated with proposed actions by those agencies. Technical experts in the Bureau reviewed environmental study documents for mineral-related issues and the adequacy of mineral information, and they provided professional comments and advice. The Bureau also provided limited on-site inspections and contributed its assessments to selected environmental studies. For the period FY 1988 through FY 1990, the Bureau received approximately 7,000 requests for mineral land assessment information. These included draft and final environmental statements for review, and requests for general information and advice from other agencies, the Congress, and the public.

Proposed Work in FY 1991:

Environmental-related activities are expected to grow in importance as the Bureau becomes involved with more field inspections. These inspections will help other agencies identify mineral issues early in the development of environmental reports. The Bureau will continue to review environmental documents in order to ensure an adequate treatment of minerals, and prepare mineral land assessment information for other agencies, the Congress, and the public.

Outyear Plans:

The Bureau's Land Assessment program will continue to develop and provide comprehensive mineral resource information that supports land-management decisions by the Congress and Federal land-management agencies. Mineral surveys on BLM wilderness study areas have been completed; the Bureau will begin to conduct mineral studies of BLM Resource Management Areas in support of the BLM planning process. Mineral surveys on FS lands will continue at approximately the present level on a forest-wide and special study basis as provided under an interagency agreement with USGS and the FS. The Mining District Studies and Site-Specific Mineral Investigations will continue at approximately their present level. Environmental-related studies are expected to increase in scope and importance as the Bureau becomes more directly involved with field studies in areas of particular mineral and environmental concern.

INCREASE FOR FY 1991:

(Dollar Amounts in Thousands)

		FY 1991 Base	FY 1991 Estimate	Change
Land Assessments	$	8,893	9,693	800
	(FTE-T)	(135)	(137)	(+2)

Alaska has the highest potential for critical and strategic mineral deposits in North America. Alaskan mineral terranes extending into the Soviet Union and Canada are more developed than in Alaska and contain world

class deposits. The Bureau, under its Alaska Strategic and Critical Minerals Initiative, locates and assesses the resource development potential of deposits in these mineral terranes. Accomplishment of the Initiative goals will be enhanced by expanded efforts of the existing Mining District Studies and Site-Specific Mineral Investigations programs. This Initiative provides timely, comprehensive strategic and critical mineral data required by Federal and State agencies to make well-informed economic, policy, and land-use decisions, and encourages industry involvement in the exploration and development of strategic and critical minerals in Alaska. It focuses not only on the current strategic and critical minerals, but also on the minerals emerging as potentially important to new technology and advanced materials. The Initiative emphasis is to decrease the U.S. net import reliance on South African supplies of selected minerals as mandated by P.L. 99-440, the Anti-Apartheid Act of 1986, and to help satisfy Sec. 1010 (a) of the Alaska National Interest Lands Conservation Act, P.L. 96-487, which states that the "Secretary shall...assess the oil, gas, and other mineral potential on all public lands in the State of Alaska...." This initiative will be carried out in cooperation with the Alaska State Division of Geological and Geophysical Surveys. ($800,000)

* * * * * *

MINERAL COMMODITIES

OVERVIEW: The Bureau collects, analyzes, publishes, and disseminates statistical, technical, and economic information for about 100 mineral commodities and materials. Timeliness of publication, data accuracy, and quality of service to data users are of key value in the process. Bureau specialists examine almost every commercial activity involving minerals--exploration, development, mining, processing, consumption, prices, and trade.

The resulting information, available to the public via reports, books, and computer disks, presents a comprehensive picture of the U.S. and world mineral industries. It provides a basis for predicting future mineral supply and demand, and for spotting trends that could affect the Nation's ability to meet its mineral needs. These activities support cost-effective mineral-related decisions by the Federal government, States, and the private sector by:

- o Providing comprehensive and timely minerals and materials information that policy analysts and decisionmakers can rely upon as official U.S. mineral information.
- o Assessing the impact of advanced materials on traditional materials and estimating the degree of substitution.
- o Providing reliable information for analyses of national and international mineral problems, and disseminating worldwide information on the production, consumption, and availability of nonfuel minerals and associated issues.
- o Identifying trends and issues affecting mineral supply and demand.

The Bureau's mineral information publications and analytical studies are used by various sectors and occupational groups and by members of Congress, the National Critical Materials Council, and virtually all Federal agencies whose missions relate to defense, the improvement of the national economy, foreign relations, and, of course, minerals. Users of Bureau data include market analysts who provide the information needed to support capital investment decisions in the materials sector; government and private analysts who assess the economy and set economic policies; agencies dedicated to ensuring the national security; and U.S. delegations in their work with international commodity groups.

PROGRAM:

Mineral Commodities: This program provides reliable consultative services and data for analysis of national and international mineral problems and disseminates worldwide information on the engineering, economic, regulatory, trade, and competitive factors impacting on the nonfuel mineral industry.

Progress in FY 1990 and Prior Years:

Advanced Materials. In recognition of the rapid development of new materials and their potential impact on the use of traditional materials and on the mining and mineral processing industries, the Bureau began an effort in FY 1987 to develop methods of acquiring data on the production and use of data for new materials. The data bases developed will be available to Bureau staff for preparation of policy studies and special impact assessments, and to other Federal agencies and the private sector.

In FY 1987, the Bureau established the Office of Advanced Materials Coordination to coordinate all of the agency's activities involving advanced materials. The Office prepared guidelines for Bureau activities and a detailed classification of advanced materials. Liaison was established with other interested departments and congressional staff.

In FY 1988 and FY 1989, several special studies on advanced materials were completed, including a major report that forecast markets for advanced materials and examined policy options to enhance commercialization of new materials. Other published reports analyzed the impact of advanced materials on conventional nonfuel mineral markets and examined problems and opportunities in the metal and materials industry. The Bureau also completed studies on high-tech applications and the availability of gallium, strontium, and high-purity silicon. A significant portion of the Advanced Materials Program Plan of the National Critical Materials Council in the Executive Office of the President was prepared.

Work on a data base on the structure of the advanced materials industry was initiated in FY 1989, and methods for obtaining data on the production and use of advanced materials were developed.

Institutionalization of an advanced materials function was accomplished in FY 1990 with the establishment of a line organization to obtain, analyze, and disseminate advanced materials data. Chapters on advanced materials will be prepared for the *Minerals Yearbook* and other periodic Bureau publications.

During FY 1990, the Bureau sponsored a government-industry-university conference on advanced materials to identify data needs, availability, and dissemination and to enlist the cooperation of industry in such efforts.

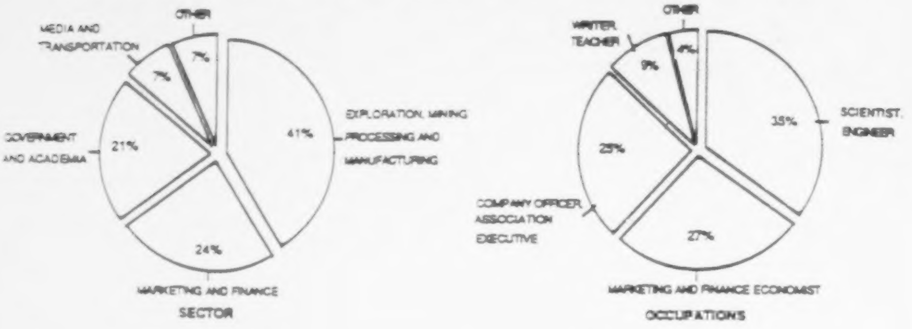
Minerals Yearbook. Beginning with the 1988 edition, the *Minerals Yearbook* format was enlarged to an 8.5" x 11" size with emphasis on the individual chapters rather than the bound volume. Each chapter is now published as an individual report with its own color cover. Starting with the 1989 edition, the content of the Yearbook was expanded to include information on industry structure, technology, supply/demand analysis, economic factors, and forecasts of U.S. and world demand for individual commodities. This type of information had previously been published only every 5 years in *Mineral Facts and Problems*.

Mineral Industry Surveys. The Surveys provide timely statistical information on production, distribution, stocks, and consumption of significant mineral commodities. The Bureau issues a total of about 400 monthly, quarterly, and annual surveys. Electronic publication methods allowed the Bureau to revise the format and improve the timeliness of these publications. Starting in 1989, sample quarterly surveys of crushed stone and of sand and gravel production were conducted by telephone and reports were published within 45 days after the close of the quarter.

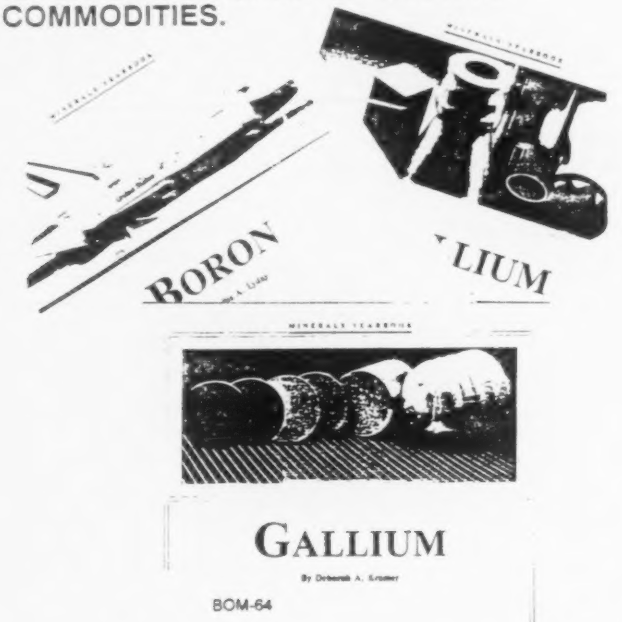
Mineral Commodity Summaries. This annual report, published each January, provides estimates on production, consumption, trade, recycling, substitution, reserves, resources, and other relevant information on mineral commodities. More definitive data are published later in the *Minerals Yearbook*. The report published in 1990 included for the first time a section on international events. *State Mineral Summaries*, a companion publication, was published for the first time in 1989. This new publication is described more fully under State Activities.

State Activities. By maintaining a close relationship between Federal, State, and local governments, the State Activities program contributes to the Bureau's mineral information base, and to the identification of mineral issues requiring the attention of the Federal government.

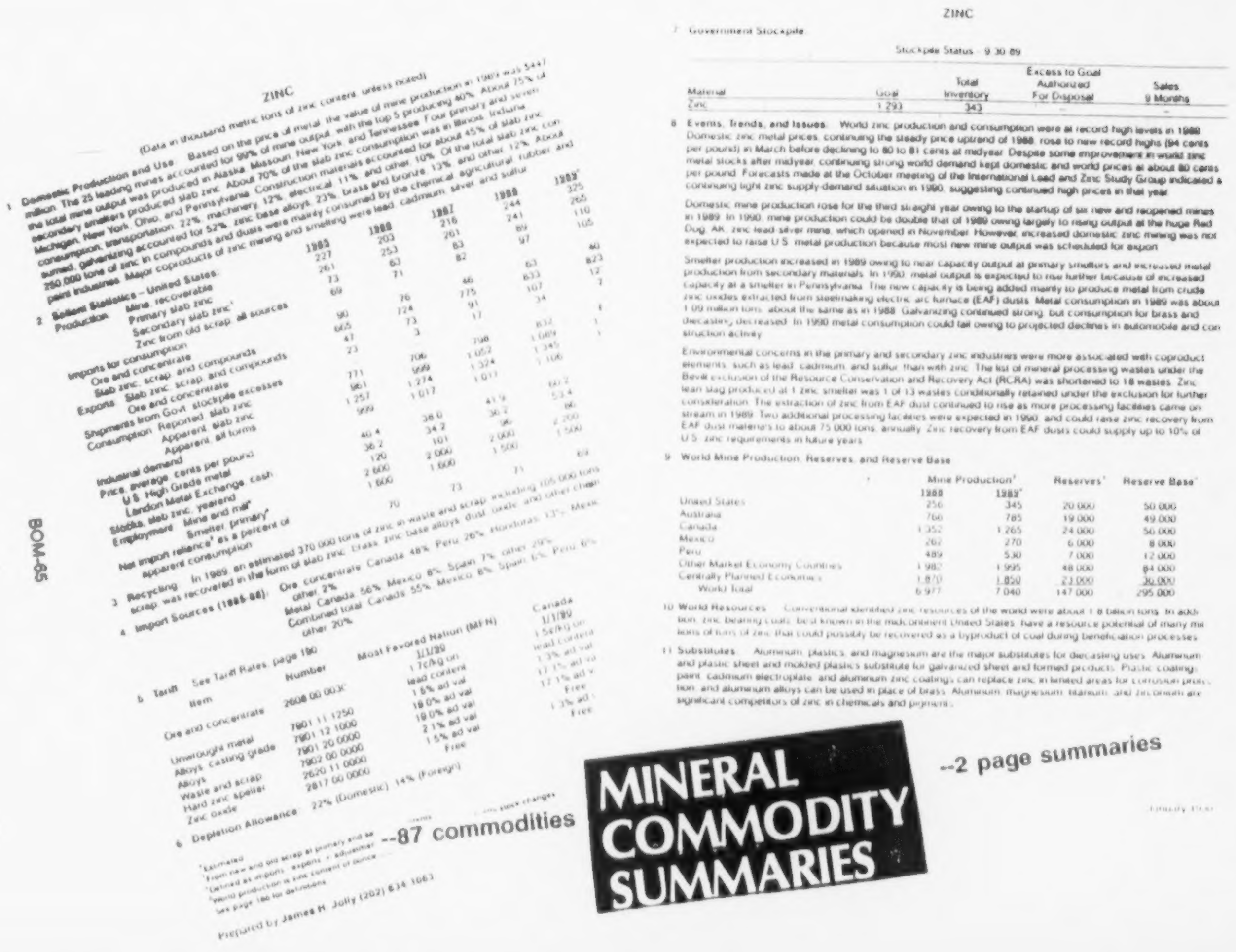
PRINCIPAL USERS OF MINERALS PUBLICATIONS.



ANNUAL REPORTS PUBLISHED ON OVER 80 MINERAL COMMODITIES.


MINERALS YEARBOOK
BORON
MINERALS YEARBOOK
LIUM
MINERALS YEARBOOK
GALLIUM
By Deborah A. Kramer

BOM-65



ZINC

(Data in thousand metric tons of zinc content, unless noted)

1 **Domestic Production and Use:** Based on the price of metal, the value of mine production in 1989 was $447 million. The 25 leading mines accounted for 99% of mine output, with the top 5 producing 40%. About 75% of the total mine output was produced in Alaska, Missouri, New York, and Tennessee. Four primary and seven secondary smelters produced slab zinc. About 70% of the slab zinc consumption was in Illinois, Indiana, Michigan, New York, Ohio, and Pennsylvania. Construction materials accounted for about 45% of slab zinc consumption, transportation 22%, machinery 12%, electrical 11%, and other 10%. Of the total slab zinc consumed, galvanizing accounted for 52%, zinc base alloys 23%, brass and bronze 13%, and other 12%. About 250,000 tons of zinc in compounds and dusts were mainly consumed by the chemical, agricultural, rubber, and paint industries. Major coproducts of zinc mining and smelting were lead, cadmium, silver, and sulfur.

2 **Salient Statistics—United States:**

	1985	1986	1987	1988	1989[1]
Production: Mine, recoverable	227	203	216	244	325
Primary slab zinc	261	253	261	241	265
Secondary slab zinc[2]	73	63	83	89	110
Zinc from old scrap, all sources	69	71	82	97	105
Imports for consumption:					
Ore and concentrate	90	76	46	63	40
Slab zinc, scrap, and compounds	665	724	775	833	823
Exports: Slab zinc, scrap, and compounds	47	73	91	107	12
Ore and concentrate	23	3	17	34	7
Shipments from Govt. stockpile excesses					[illegible]
Consumption: Reported, slab zinc	771	706	798	832	[illegible]
Apparent, slab zinc	961	999	1,052	1,089	[illegible]
Apparent, all forms	1,257	1,274	1,324	1,345	[illegible]
Industrial demand	999	1,017	1,017	1,106	
Price, average, cents per pound: U.S. High Grade metal	40.4	38.0	41.9	60.2	
London Metal Exchange, cash	36.2	34.2	36.2	53.4	
Stocks, slab zinc, yearend	120	101	96	86	
Employment: Mine and mill[4]	2,600	2,000	2,000	2,200	
Smelter, primary[4]	1,800	1,600	1,500	1,500	
Net import reliance[3] as a percent of apparent consumption	70	73	71	69	

3 **Recycling:** In 1989, an estimated 370,000 tons of zinc in waste and scrap, including 105,000 tons was recovered in the form of slab zinc, brass, zinc base alloys, dust, oxide, and other chem

4 **Import Sources (1985-88):** Ore, concentrate: Canada 48%, Peru 26%, Honduras 13%, Mexic other 2%. Metal: Canada 56%, Mexico 8%, Spain 7%, other 29%. Combined total: Canada 55%, Mexico 8%, Spain 6%, Peru 6%, other 20%.

5 **Tariff:** See Tariff Rates, page 190.

Item	Number	Most Favored Nation (MFN) 1/1/90	Canada 1/1/90
Ore and concentrate	2608.00.0030	1.7¢/kg on lead content	1.5¢/kg on lead content
Unwrought metal	7901.11.1250	1.5% ad val.	1.3% ad val.
Alloys, casting grade	7901.12.1000	19.0% ad val.	17.1% ad va
Alloys	7901.20.0000	19.0% ad val.	17.1% ad v
Waste and scrap	7902.00.0000	2.1% ad val.	Free
Hard zinc spelter	2620.11.0000	1.5% ad val.	1.3% ad
Zinc oxide	2817.00.0000	Free	Free

6 **Depletion Allowance:** 22% (Domestic), 14% (Foreign).

[1] Estimated.
[2] From new and old scrap at primary and se
[3] Defined as imports - exports + adjustme ments stock changes
[4] World production is zinc content of conce
[5] See page 186 for definitions.

Prepared by James H. Jolly (202) 634-1063

--87 commodities

ZINC

7 Government Stockpile:

Stockpile Status—9-30-89

Material	Goal	Total Inventory	Excess to Goal Authorized For Disposal	Sales 9 Months
Zinc	1,293	343	—	—

8 **Events, Trends, and Issues:** World zinc production and consumption were at record high levels in 1989. Domestic zinc metal prices, continuing the steady price uptrend of 1988, rose to new record highs (94 cents per pound) in March before declining to 80 to 81 cents at midyear. Despite some improvement in world zinc metal stocks after midyear, continuing strong world demand kept domestic and world prices at about 80 cents per pound. Forecasts made at the October meeting of the International Lead and Zinc Study Group indicated a continuing tight zinc supply-demand situation in 1990, suggesting continued high prices in that year.

Domestic mine production rose for the third straight year owing to the startup of six new and reopened mines in 1989. In 1990, mine production could be double that of 1989 owing largely to rising output at the huge Red Dog, AK, zinc-lead-silver mine, which opened in November. However, increased domestic zinc mining was not expected to raise U.S. metal production because most new mine output was scheduled for export.

Smelter production increased in 1989 owing to near capacity output at primary smelters and increased metal production from secondary materials. In 1990, metal output is expected to rise further because of increased capacity at a smelter in Pennsylvania. The new capacity is being added mainly to produce metal from crude zinc oxides extracted from steelmaking electric arc furnace (EAF) dusts. Metal consumption in 1989 was about 1.09 million tons, about the same as in 1988. Galvanizing continued strong, but consumption for brass and diecasting decreased. In 1990 metal consumption could fall owing to projected declines in automobile and construction activity.

Environmental concerns in the primary and secondary zinc industries were more associated with coproduct elements, such as lead, cadmium, and sulfur, than with zinc. The list of mineral processing wastes under the Bevill exclusion of the Resource Conservation and Recovery Act (RCRA) was shortened to 18 wastes. Zinc lean slag produced at 1 zinc smelter was 1 of 13 wastes conditionally retained under the exclusion for further consideration. The extraction of zinc from EAF dust continued to rise as more processing facilities came on stream in 1989. Two additional processing facilities were expected in 1990, and could raise zinc recovery from EAF dust materials to about 75,000 tons, annually. Zinc recovery from EAF dusts could supply up to 10% of U.S. zinc requirements in future years.

9 **World Mine Production, Reserves, and Reserve Base:**

	Mine Production[4] 1988	Mine Production[4] 1989[1]	Reserves[5]	Reserve Base[5]
United States	256	345	20,000	50,000
Australia	766	785	19,000	49,000
Canada	1,352	1,265	24,000	56,000
Mexico	262	270	6,000	8,000
Peru	489	530	7,000	12,000
Other Market Economy Countries	1,982	1,995	48,000	84,000
Centrally Planned Economies	1,870	1,850	23,000	36,000
World Total	6,977	7,040	147,000	295,000

10 **World Resources:** Conventional identified zinc resources of the world were about 1.8 billion tons. In addition, zinc-bearing coals, best known in the midcontinent United States, have a resource potential of many millions of tons of zinc that could possibly be recovered as a byproduct of coal during beneficiation processes.

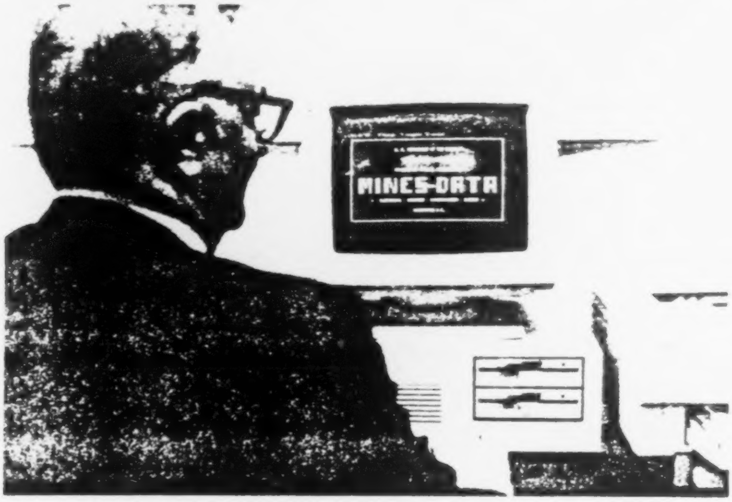
11 **Substitutes:** Aluminum, plastics, and magnesium are the major substitutes for diecasting uses. Aluminum and plastic sheet and molded plastics substitute for galvanized sheet and formed products. Plastic coatings, paint, cadmium electroplate, and aluminum-zinc coatings can replace zinc in limited areas for corrosion protection, and aluminum alloys can be used in place of brass. Aluminum, magnesium, titanium, and zirconium are significant competitors of zinc in chemicals and pigments.

MINERAL
COMMODITY
SUMMARIES

--2 page summaries

ELECTRONIC DATA DISSEMINATION

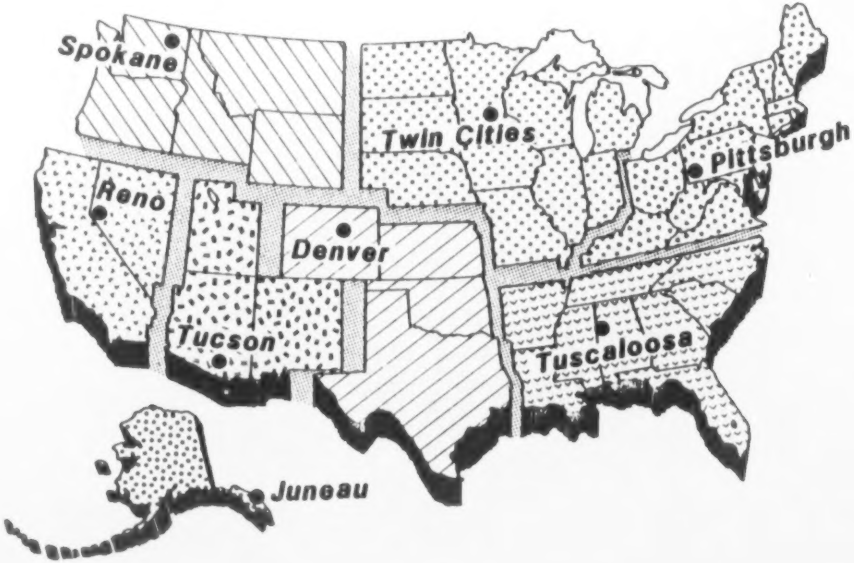
Updating the MINES-DATA on-line microcomputer data base.



Accessing the MINES-DATA system with a microcomputer to obtain data several weeks earlier than the publication.

BOM-66

STATE ACTIVITIES REGIONAL OFFICES KEEP THE BUREAU AWARE OF LOCAL ISSUES.


Spokane
Reno
Tucson
Denver
Twin Cities
Pittsburgh
Tuscaloosa
Juneau

BOM-67

The Annual State Mineral Industry Surveys, published each January, were expanded to provide more timely information concerning the most significant developments in the States. These individual State reports were also published as a bound volume for the first time. *State Mineral Summaries* contained reports for the 50 States and Puerto Rico. Also, to assist the Environmental Protection Agency in establishing reasonable, cost-effective regulation of mining wastes under the Resource Conservation and Recovery Act, the Bureau identified and briefly examined State regulatory systems.

Proposed Work in FY 1991:

The collection, interpretation, and dissemination of comprehensive and timely mineral and materials information will continue. Additional improvements in the timeliness and format of publications are planned. The expanded version of the *Minerals Yearbook* in its new format will be published.

Advanced Materials. The agency will carry out the recommendations related to advanced materials contained in a Bureau-sponsored study by the National Academy of Sciences; undertake studies to examine the impact of advanced materials on the use of traditional materials and the implications for the competitive position of the United States; and prepare special reports and analyses of materials issues for inclusion in other Bureau publications. Emphasis will be placed on high-technology strategic materials designated by the Department of Defense as being of special interest.

Minerals Yearbook. The 1990 *Minerals Yearbook* will be completed. It will provide the most important minerals and materials information--domestic and international--for the year under review.

Mineral Industry Surveys. The Bureau will continue publishing timely reports covering production and consumption of minerals on a monthly, quarterly, semiannual, and annual basis, as appropriate.

Mineral Commodity Summaries. This annual overview of mineral data will be prepared.

State Activities. Program activities are supporting the development of an advanced materials information data system. The Annual State Mineral Industry Surveys will be published separately and in a bound volume. The identification and analysis of regional mineral issues that have national significance will be expanded.

Outyear Plans:

The Bureau will continue to publish its minerals information through standard publications and, where appropriate, develop new publications series. The results and recommendations of contractor studies on the Bureau's minerals information program will be implemented to the greatest extent. Special emphasis will be placed on developing improved information on industrial minerals and advanced materials, achieving greater interaction with other agencies on environmental issues, and establishing a closer relationship with State mineral activities.

INCREASE FOR FY 1991: (Dollar Amounts in Thousands)

		FY 1991 Base	FY 1991 Estimate	Change
Mineral Commodities	$	6,957	7,207	250
	(FTE-T)	(94)	(94)	(---)

An Advanced Materials Branch will be established in the Division. Work on data bases on advanced materials production and use and on the structure of the advanced materials industry, begun during FY 1989 and FY 1990, will continue and include information from the producing countries of Europe and Australia. Data will cover the international structure of the industry and material flow--information which is needed by government and industry decisionmakers. In FY 1991 and future years, information will be acquired on advanced materials research and development and on trade of advanced materials. Reports on advanced materials and advanced materials issues will be prepared to be published in regular Bureau publications. An increase of $250,000 is requested for this effort.

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INTERNATIONAL MINERALS

OVERVIEW: This program maintains the international mineral expertise needed to support the executive and legislative branches in developing U.S. policy in response to international mineral issues and events.

In an international economic system, U.S. decisionmakers need information on the production plans, trade practices, labor and energy constraints, level of technology, foreign investments, mineral policies, and the environmental practices of countries that supply essential minerals to the United States as well as those that compete with the United States in world mineral markets.

This information is provided by country specialists with area knowledge, and language and technical skills needed to assess the mineral industries of some 160 countries. Their work involves a comprehensive understanding of the social, economic, and political environment in which the mining industry of each country operates as well as an understanding of its importance in world mineral markets.

World coverage is divided into four regions: Africa and the Middle East, the Far East and Australia, Europe and the U.S.S.R., and Latin America and Canada. A separate staff of geographic mineral statistics specialists collects, interprets, and disseminates world mineral production and trade data. This group is skilled in developing reverse trade statistics on non-reported Eastern Bloc mineral trade with the West.

PROGRAM:

Progress in FY 1990 and Prior Years:
Continuing activities address mineral publications, international data acquisition, and analysis efforts.

Mineral Yearbook-International Volume (Volume III). One of the principal publications of the International Minerals Division has been the International Volume of the *Minerals Yearbook*. In FY 1989 desktop publishing technology was used to update the format and improve the timeliness of this publication.

Mineral Commodity Summaries. A new international review section was prepared for *Mineral Commodity Summaries*. It described the major developments and trends in the world mining industry in 1989.

Statistical Compendium. Work was begun on preparing a separate and expanded international statistical compendium. This compendium will make historical data more readily available to researchers and analysts.

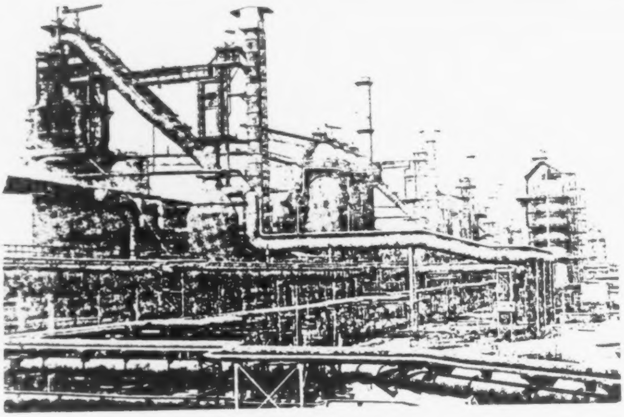
Mineral Perspective Series. This series provides concise reference books on the mineral industries of major geographic regions of the world and in-depth studies of selected countries that analyze technical, policy, and economic factors affecting their mineral industries. The regional reference books are updated on a 5-year cycle. Between 1976 and 1989, two complete editions summarizing the mineral industries of six regions (Africa; Australia, Canada and Oceania; Europe and the U.S.S.R.; Far East and Asia; Latin America; and the Middle East) were published. Beginning in FY 1990, information formerly provided in these regional books was included in a revised *Minerals Yearbook-International Volume*. The revised format provides the user with a more comprehensive, and readable review of world mineral and material events.

In FY 1990 and subsequent years, the Minerals Perspectives Series will concentrate on the indepth analysis of the mineral industries of selected industrial and emerging nations which have a significant impact on U.S. and world mineral supply. Detailed studies on Mexico and Guinea were published in FY 1990 and work began on a country study of Brazil.

SCOPING WORLD MINERALS

Copper--China

Tin--Malaysia

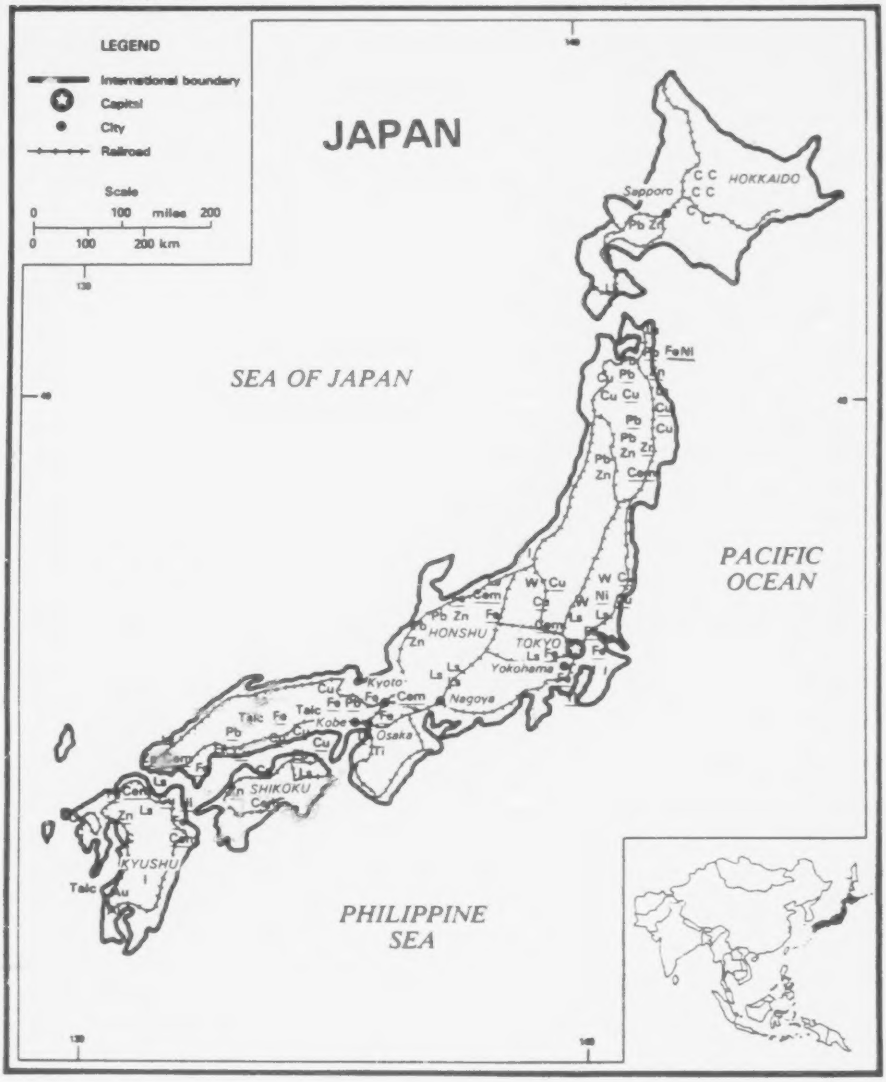


Steel--India

KEEPING ABREAST OF FOREIGN MINERALS ACTIVITIES

Major mineral locations of Japan

AREA 372,313 km² **POPULATION 121.4 million**


LEGEND
International boundary
Capital
City
Railroad
Scale
0 100 miles 200
0 100 200 km
JAPAN
SEA OF JAPAN
PACIFIC OCEAN
PHILIPPINE SEA
HOKKAIDO
Sapporo
HONSHU
SHIKOKU
KYUSHU
TOKYO
Yokohama
Nagoya
Kyoto
Kobe
Osaka
C
Pb
Zn
Cu
Fe
FeNi
Cem
W
Ni
Ls
Talc
Au
Ti
I
130
140
40

Mineral Issues Series. This series, which is based on extensive research with primary source documents, provides information on the resource potential and industrial production capabilities of selected strategic mineral sectors in the Soviet Union and China. In the U.S.S.R. industry analysis series, studies on the copper, chromite, manganese and tungsten industries have been published. Studies on the nickel and cobalt industries of the U.S.S.R. were published in FY 1990. For China, the first detailed study on its iron and steel industry was published in FY 1990 and a study on China's non-ferrous metals industry began in FY 1990.

Special Studies. During FY 1990, the Bureau published a multinational study on the mineral resources of sub-equatorial Africa. The study, which was prepared under the auspices of the International Strategic Minerals Inventory Group (a six-country working group), examined the geology and mineral resources of 15 countries in sub-equatorial Africa. The Bureau's international minerals and minerals availability programs contributed to the study.

Other Activities: Specialists participated in and supported U.S. policy discussions on: the imposition of further economic sanctions on South Africa; mineral issues related to the U.S.-Canadian Free Trade Agreement; and the U.S. position toward International Monetary Fund, World Bank, and EXIM Bank loans to develop overseas mineral industries that compete with U.S. industry. In addition, Bureau country specialists participated in a number of international organizations such as the World Mining Congress and the Circum-Pacific Council for Energy and Mineral Resources. They maintained an active dialogue with United Nations and World Bank officials involved with international mineral developments and with the other major international mineral statistical reporting organizations. The Division staff met with many foreign visitors each year who were interested in the U.S. mining industry and in U.S. mineral policy and organizational issues. The Division provided minerals and materials-related country-specific orientation briefings to U.S. Ambassadors and U.S. Embassy officers taking on new assignments in important mineral-producing countries. It responded to many requests by U.S. users for information on current developments in and laws affecting the international mining industries.

Proposed Work in FY 1991.

The Bureau will continue its program of providing comprehensive international minerals information and analysis for use by U.S. policymakers, mining and financial industry decisionmakers, and other researchers.

Minerals Yearbook-International Volume. The Division will prepare information and statistics for the 1989 volume in the revised expanded format and contribute the international review section to the 1991 *Mineral Commodity Summaries*.

Mineral Perspective Series. The Division will complete a detailed country study on Brazil. The study will examine the increasingly important role Brazil is playing in the production, consumption, and trade of strategic minerals.

Mineral Issue Series. The second in a series of studies on China will highlight China's role in the world trade of nonferrous metals. A new study will examine the competitive position of the major industrialized countries of Asia (Japan, South Korea, Taiwan, Hong Kong, and Singapore) as significant importers of mineral raw materials and large exporters of value-added manufactured goods. Their role in world markets and the impact of their mineral and material trade on the United States will be explored. In cooperation with the Bureau's policy analysts, the Division's European country specialists will prepare a study on the impact of the planned 1992 economic merger of the European Community on mineral trade with the United States.

Infrastructure Development. In FY 1991, a major effort will begin to integrate the Division's international mineral production and trade data bases into the Directorate's new centralized electronic file and retrieval system. The international data bases will be developed as a relational data base which will make the data more accessible and usable to analysts.

Outyear Plans:
The information function upgrade will improve the Bureau's analytical capabilities in the international area. Automation of international information data bases will permit more rapid and comprehensive responses to Congress and other Executive branch agencies that seek assessment of global mineral and material developments. Efforts to integrate these data bases with a geographic information system will greatly improve the Bureau's ability to present graphically mineral data and trends and to analyze the flow of the international mineral trade. This capability will become very important to U.S. trade policy analysts as the United States faces increasing competition for the raw and processed materials that support our industrial economy.

No increase in funds is requested for FY 1991.

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STATISTICS AND INFORMATION SERVICES

OVERVIEW: The Bureau of Mines is the principal Federal agency responsible for collecting and disseminating mineral information. Information is collected on mineral production in the United States and throughout the world. The agency assesses the worldwide availability of minerals, giving highest priority to deposits under U.S. control. It analyzes the impact government policies, economic conditions, and political events have on the mineral sector of the economy and the Nation's mineral supplies.

Statistical data prepared by the Bureau help government officials make decisions about land use, regulations, trade policy, defense preparedness, and other issues. Members of Congress call on the Bureau for expert opinions when they write legislation and conduct oversight activities involving minerals and mining. Other federal agencies, such as the Departments of Defense, State, and Commerce, rely heavily on Bureau data and staff in carrying out their responsibilities. Thousands of individuals and organizations depend on the Bureau for information about minerals. Mineral industry executives use Bureau information in managing their business. Market analysts study the agency's data and projections to guide their client's investment decisions. Economists, statisticians, scientists, engineers, librarians, teachers, association executives and university professionals, use and benefit from information provided by the Bureau.

Although other agencies in the public and private sectors also collect mineral data, the Bureau of Mines is the only source of current, comprehensive and compatible minerals information, information that is essential to the Nation's economy and strategic posture. Information collected by private organizations is suited for their own specific needs and is not sufficient for broad minerals policy analysis on a national scale.

To meet the evolving needs of its constituents and to correct a number of accumulated problems, the Bureau proposes to significantly enhance its ability to collect and disseminate the official mineral statistics of the United States--gathering, analyzing and distributing information about minerals. The establishment of a new statistical organization; augmentation of data and information collection capabilities, redesigning and broadening its periodic publications; and developing an efficient supporting infrastructure are key to this effort.

Progress in FY 1990 and Prior Years:
The Division of Statistics and Information Services was established early in Fiscal Year 1990. The objectives for creating the new division were to recognize the distinct importance of statistics and data activities; strengthen statistical practices, data collection and publishing functions; provide a focal point for advanced technologies; and enable more effective management of human resources. Much of the division's efforts involved reviewing internal operations with a view to improving timeliness and quality of services.

Data Conversion. Progress towards the conversion of two of the Bureau's major data bases to one relational data base continued. The MAS (Minerals Availability System) data base and AMIS, (Automated Minerals Information System) are being converted to a relational data base to attain compatibility between those two systems. The role of these data bases is being expanded from limited access, production oriented systems, to wide access, ad hoc inquiry and analytical support systems.

Management of Human Resources. One of the compelling reasons for the establishment of the new Division was the need to resolve systemic retention and recruitment problems that have plagued the data collection group. An occupational study was conducted which resulted in the design, development and implementation of career ladders for data assistant positions, thereby providing for more rewarding, challenging work, increased upward mobility opportunities, reduced attrition, and improved recruitment efforts.

Statistical Compendium. Work was begun to compile the historical official mineral statistics for the United States. This statistical compendium will become the primary reference for Bureau historical commodity data for the most important minerals.

Advanced Technologies. Desktop publishing and electronic data dissemination technologies were introduced which improved the quality, timeliness, appearance and availability of publications.

Statistical Standards/Procedures for Data Collection. Statistical practices, standards and methods were strengthened through development and implementation of up-to-date statistical methods and techniques. Consistent procedures and processes for the collection and treatment of data were developed and institutionalized, thereby increasing the validity and reliability of the data for use by experts, specialists and analysts.

Proposed Work in FY 1991:

The collection and dissemination of comprehensive and timely mineral and materials information will continue. Additional improvements in the timeliness and format of publications are planned. Information and Analysis publications will continue to be modernized to improve the readability, appearance and the timeliness of the publications. Recent user surveys conducted by the Bureau have indicated that users want more timely Bureau publications. This will be accomplished by using modern techniques for gathering, processing and disseminating information, including telephonic, facsimile machine, and other electronic survey methods, desktop publishing, and electronic bulletin boards.

Advanced Materials. The Bureau will continue developing data acquisition methods and will prepare data bases on production and end uses, on advanced materials research and development, and on trade.

Minerals Yearbook. Publication of the 1990 *Minerals Yearbook* will be completed. Statistical data will continue to be collected in support of the publication.

Mineral Industry Surveys. The Bureau will continue to collect timely statistical data covering production and consumption of minerals on a monthly, quarterly, semiannual, and annual basis, as appropriate.

Mineral Commodity Summaries. Collection of mineral data for this annual overview of the mineral industry will continue.

Statistical Compendium. Work will continue on the statistical compendium to be published in FY 1992.

Statistical Standards. The introduction of new technological tools for data collection will continue. In addition, an interface will be developed between the existing minerals information data base and a commercially available statistical analysis package. This effort should improve the Bureau's ability to produce ad hoc analyses and reports.

Outyear Plans:
The Bureau will continue providing minerals information through regular publications and, where appropriate, new publications. The agency will also take advantage of new technological developments to improve timeliness and usefulness of Bureau data. The results and recommendations of contractor studies on the Bureau's minerals information program will be implemented when feasible.

Significant improvements in the accessibility and utility of two major data bases, AMIS and MAS, will continue. These will be achieved at costs similar to or less than current ADP charges through the purchase of new mini-computer systems and conversion to a relational data base management system. This will allow flexible low-cost adjustments to the technological changes of the 1990's.

The new *Compendium of Historical Statistics* will be published in FY 1992.

Publication schedules will improve due to increased utilization of electronic data collection and dissemination.

INCREASE FOR FY 1991:

(Dollar Amounts in Thousands)

		FY 1991 Base	FY 1991 Estimate	Change
Statistics and Information Services	$	5,711	7,711	2,000
	(FTE-T)	(91)	(91)	(—)

Publications will be modernized to improve their readability, appearance, and timeliness. Recent user surveys conducted by the Bureau have indicated a great interest in more timely publications. The use of desktop publishing will permit improvements in the format of publications while at the same time reducing the amount of time that elapses between the preparation of a manuscript and the publication of a final report. The Minerals Yearbook will be expanded to include information from the *Minerals Facts and Problems* or *Mineral Perspectives*, be enlarged to an 8.5x11 size, have a colored cover, use more graphics in the presentation, be more readable, and become more timely by using desktop publishing. An International Events section will be added to the *Mineral Commodity Summaries*. *State Mineral Summaries* will be published every January. *Mineral Industry Surveys* will be processed through desktop publishing and through an electronic bulletin board. A new publication, *Minerals Today* has replaced *Minerals and Materials*, and will become the Bureau's principal means for disseminating current information on minerals and materials developments, trends and issues. Additionally, a new statistical compendium will be developed and published annually, providing the official historical statistics of the United States for minerals. An increase of $650,000 will allow these improvements.

Timeliness of publications will also be improved by using modern electronic techniques for gathering and processing information. Use of facsimile machines will speed data gathering. Sample surveys such as those for industrial minerals will be conducted by telephone. The increased use of personal computers that have access to centralized data bases will accelerate data processing. An increase of $450,000 will fund these improvements by allowing purchases of additional facsimile machines, telecommunications equipment, and personal computers, as well as contractor support to conduct the telephone surveys.

The data bases on advanced materials production and use and on the structure of the advanced materials industry, begun during FY 1989 and 1990, will be enlarged to include information from the producing countries of Europe and Australia. Data will cover the international structure of the industry and material flow—information which is needed by government and industry decisionmakers. In FY 1991 and future years, data will be acquired on advanced materials research and development and on trade of advanced materials. This work will require funding at $50,000 for contractor support.

Upgrading the quality of the Bureau's statistical publications will require significant improvements in the accessibility and utility of the Bureau's major data bases. These improvements will be achieved by converting the existing data bases to a relational data base management system–an effort that began in FY 1990. Additional funding needed in FY 1991 and the out years is $450,000 per year to complete the conversion and maintain the computer equipment and data bases.

To correct a number of long-standing problems, the Bureau has upgraded its statistical function by establishing a Division of Statistics and Information Services and hiring private firms to handle some activities now performed inhouse. The new organization will be responsible for modernizing survey techniques, upgrading statistical standards, improving the quality and timeliness of statistical processing, and upgrading the quality of the Bureau's statistical publications. The additional cost of this effort in FY 1991 and the out years is $300,000 per year for career development opportunities for the staff and for contractor support.

The Bureau will implement and maintain an internally managed electronic data dissemination system. Such a system will provide users of Bureau information ready access to data from selected Mineral Information Surveys, *Mineral Commodity Summaries*, and *Minerals Yearbook* chapters. The system will use two high-level microcomputers; users will be able to access data 24 hours-a-day, 7 days-a-week. The system will make selected data available 14 days earlier. The annual cost of this effort will be $100,00 to purchase contractor support and maintain the government owned microcomputers.

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SUBACTIVITY INCREASES FOR FY 1991

(Dollar Amounts in Thousands)

Subactivity		FY 1991 Base	FY 1991 Estimate	Increases
Policy Analysis	$	4,980	5,830	+850
	(FTE-T)	(62)	(62)	(—)
Resource Evaluation Minerals Availability	$	7,001	7,101	+100
	(FTE-T)	(108)	(108)	(—)
Land Assessment	$	8,893	9,693	+800
	(FTE-T)	(135)	(137)	(+2)
Mineral Commodities	$	6,957	7,207	+250
	(FTE-T)	(94)	(94)	(—)
Statistics and Information Service	$	5,711	7,711	+2,000
	(FTE-T)	(91)	(91)	(—)

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OBJECT CLASSIFICATION DISTRIBUTION

The object class detail for the $4,000,000 increase for the Information and Analysis subactivity is as follows:

	FTE-T	Amount
Personnel Compensation	(+2)	$ 65,000
Personnel Benefits		20,000
Travel and Transportation of Persons		160,000
Transportation of Things		55,000
Communications, Utilities and Miscellaneous Charges		350,000
Printing		600,000
Other services		2,300,000
Supplies and Materials		100,000
Equipment		350,000
Total		$ 4,000,000

ACTIVITY SUMMARY

Activity: RESEARCH

(Dollars in thousands)

Subactivity	1989 Actual	1990 Approp Enacted	1990 Adjusted Approp	1991 Base	1991 Estimate	Inc (+) Dec (-) from Base
Health, Safety and Mining Technology	51,672	55,035	54,306	55,113	38,155	-16,958
Minerals and Materials Science	24,643	26,440	26,090	26,485	24,485	-2,000
Environmental Technology	14,574	15,060	14,860	15,082	11,082	-4,000
Total	90,889	96,535	95,256	96,680	73,722	-22,958

Justification of Program and Performance

ACTIVITY OVERVIEW

ACTIVITY: RESEARCH

(Dollar Amounts in Thousands)

Subactivities		1990 Enacted To Date	1990 Adjusted Approp	1991 Base	1991 Estimate	Inc. (+) Dec. (-) From Base
Health, Safety & Mining Technology	$	55,035	54,306	55,113	38,155	-16,958
	(FTE-T)	(677)	(677)	(674)	(594)	(-80)
Minerals and Materials Science	$	26,440	26,090	26,485	24,485	-2,000
	(FTE-T)	(396)	(396)	(394)	(384)	(-10)
Environmental Technology	$	15,060	14,860	15,082	11,082	-4,000
	(FTE-T)	(177)	(177)	(176)	(158)	(-18)
Total Requirements	$	96,535	95,256	96,680	73,722	-22,958
	(FTE-T)	(1,250)	(1,250)	(1,244)	(1,136)	(-108)

RESEARCH

The Bureau of Mines research program develops technology to help ensure that the Nation has an adequate and dependable supply of minerals at reasonable economic, human, and environmental cost. Its research program seeks improvements for almost every aspect of the mineral production cycle-from removing the minerals from the earth to enhancing the performance of mineral materials. The health and safety of the personnel who work in the Nation's mines and mineral processing plants, expanding the scientific knowledge base to ensure production of domestic minerals, and the environmental impact of mining and mineral processing are major Bureau research concerns.

In recent years, the U.S. mineral industry has found it increasingly difficult to compete for a share of world markets. Many foreign producers benefit from lower production costs and higher grade deposits. Some foreign governments subsidize their mineral industries and impose fewer restrictions with respect to environmental controls and health and safety regulations.

If the United States is to compete in world mineral markets, innovative technology must be found to lower the cost of recovering and processing minerals. Mining and mineral processing research by the Bureau of Mines identifies ways to help the country maintain a sound, competitive industry and a dependable mineral supply, so vital to economic growth and the national security.

In a July 1989 memorandum to heads of executive departments, the Administration listed the objectives of the new Management by Objectives (MBO) system. The objective of the Research and Development MBO is directly related to the thrust of the Bureau's research program. This objective is "to encourage national investment in research and development and increase the effectiveness of this investment in meeting national needs, including national security, productivity and competitiveness, health, safety, and quality of life. The Bureau's program of long-range, high-risk and/or basic research that supports this objective is described in the sections that follow this overview.

Bureau of Mines research is coordinated with several outside organizations. Input from academia, industry, labor organizations and other government agencies including the U.S. Geological Survey (USGS), the Minerals Management Service (MMS), the National Academy of Sciences (NAS), the National Academy of Engineering (NAE), the Mine Safety and Health Administration (MSHA), the National Institute for Occupational Safety and Health (NIOSH), the Office of Surface Mining Reclamation and Enforcement

(OSMRE), the National Institute of Standards and Technology (NIST), the National Aeronautics and Space Administration (NASA), the Department of Defense (DOD), the Department of Energy (DOE), and the Environmental Protection Agency (EPA) is used in formulating the programs. The Bureau also has cooperative agreements with professional and technical groups within the minerals community to provide advice concerning its program directions. For example, the NAS recently completed a study that will help the Bureau set priorities for research under Section 401 (c)(6) of the Surface Mining Control and Reclamation Act of 1977. Recommendations from the NAS study on abandoned mined lands research are being integrated into the Environmental Technology program. Cost sharing cooperative efforts with industry are strongly pursued and have been used successfully to reduce requirements for Federal funds to prove concepts in actual mining situations and aid in technology transfer. Cooperation with Canada, Great Britain, Yugoslavia, and West Germany on mining and technology transfer has proven beneficial.

Justification of Program and Performance

SUBACTIVITY OVERVIEW

ACTIVITY: RESEARCH
SUBACTIVITY: HEALTH, SAFETY AND MINING TECHNOLOGY

(Dollar Amounts in Thousands)

Program Elements		1990 Enacted To Date	1990 Adjusted Approp	1991 Base	1991 Estimate	Inc. (+) Dec. (-) From Base
Occupational Health	$	8,431	8,319	8,440	3,840	-4,600
	(FTE-T)	(84)	(84)	(84)	(65)	(-19)
Ground Control	$	8,867	8,749	8,885	7,135	-1,750
	(FTE-T)	(127)	(127)	(126)	(111)	(-15)
Human Factors	$	3,149	3,107	3,154	2,696	-458
	(FTE-E)	(45)	(45)	(45)	(41)	(-4)
Mine Safety Systems	$	5,029	4,962	5,041	4,441	-600
	(FTE-T)	(72)	(72)	(72)	(67)	(-5)
Mine Disaster Prevention	$	7,198	7,103	7,207	4,657	-2,550
	(FTE-T)	(103)	(103)	(102)	(79)	(-23)
Experimental Facilities	$	2,334	2,303	2,337	2,337	—
	(FTE-T)	(33)	(33)	(33)	(33)	(—)
Advanced Mining Systems	$	20,027	19,763	20,049	13,049	-7,000
	(FTE-T)	(213)	(213)	(212)	(198)	(-14)
Total Requirements	$	55,035	54,306	55,113	38,155	-16,958
	(FTE-T)	(677)	(677)	(674)	(594)	(-80)

IMPACT OF PUBLIC LAW 99-177:

	1990 Enacted To Date	P.L. 99-177 B.A.Cancellation	1990 Adjusted Approp.
Health, Safety and Mining Technology	55,035	-729	54,306

As a result of the $729,000 reduction, research in all program areas will be stretched out, resulting in delays in obtaining research results. The reductions will primarily affect in-house research, thereby resulting in some delays in acquiring scientific equipment, supplies, and materials. Some program efforts will be delayed rather than cancelled.

HEALTH, SAFETY AND MINING TECHNOLOGY

The Health, Safety and Mining Technology program seeks to provide the necessary mining technology to help ensure the United States adequate supplies of minerals and energy from domestic sources. The new technology is aimed at improving the health and safety of our Nation's miners, improving mining technology to keep our Nation competitive, and mining in ways that protect our environment for future generations.

Today our trade deficit is being exacerbated by the importation of metals, nonmetals, and fuels. Further, our economy and perhaps our national defense are vulnerable to cutoffs of strategic and critical minerals obtained from unstable foreign sources. Since domestic labor costs are higher and ore grades are generally lower than those in foreign producing countries, advanced technology is needed to overcome these shortcomings.

During the last few decades, mining has progressed dramatically from labor-intensive operations to a highly mechanized industry. Surface mining equipment greatly increased in size and mobility while rapid excavation machines, such as continuous miners and longwall shearers, became common in underground coal mines. Mechanization increased the productivity of the mines and helped keep mining costs remarkably low. However, the interaction of miners, machines, and the constantly changing workplace still poses numerous risks and hazards to workers. Although the number of mining-related injuries varies from year to year, accidents continue to injure and kill workers at a frequency that is greater than for most other industries. Such accidents hamper production and economically affect the miners' families, the overall mining industry, and even the public sector. In addition to the immeasurable human suffering involved, estimated average cost to mining companies is about $12,000 for each nonfatal injury and in excess of $1.2 million for each fatality.

Bureau research will provide the U.S. mining industry with technology to help reduce accidents and injuries through the safe, efficient, and enhanced use of its human resources--the industry's and the Nation's most valuable resource. The goal is to reduce the number of accidents and injuries occurring in the Nation's mines without adversely affecting mineral production. Research will be conducted in the following areas: reducing or eliminating the hazards associated with new mining systems introduced to achieve greater mineral extraction; identifying human factor implications of new equipment and technology; improving transporting and handling of the mined minerals; preventing underground fires and explosions; and maintaining escapeways in times of an emergency. Studies will emphasize surface mining operations, new systems for underground coal extraction, mine emergency and rescue techniques; and human factor concerns resulting from advances in technology.

New mining systems introduced to combat the economic forces facing domestic mineral industries, such as extending longwall panel sizes in coal mines, could impose additional risks upon the workers. While the health and safety risks may not be significantly different from conventional extraction schemes, they are multiplied, exaggerated and made more complex as production is accelerated and increased. With increased mine production, former hazards that are currently mitigated will again surface such as higher dust and noise levels, more rapid release of methane emissions, geomechanical concerns and ground failures, and increased ventilation requirements. The Bureau is conducting a National Gateroad Study to determine the optimum number of longwall entries and pillar sizes and to resolve the various problems that could be encountered. The study involves a systems approach to the research covering several program elements. The study will effectively evaluate new extraction methods and develop strategies to ameliorate the hazards. The resulting technology will integrate the performance of both human and technological systems to achieve a highly efficient mining operation. Safer and more healthful longwall operations coupled with increased production levels will result from designing out or mitigating the inherent hazards associated with the extended size of longwall panels.

Research is coordinated with several outside organizations. The Bureau uses input from academia, industry, labor organizations, and other government agencies including the National Academy of Sciences (NAS), Mine Safety and Health Administration (MSHA), and the National Institute for Occupational Safety and Health (NIOSH) in formulating its programs. For example, under a Memorandum of Agreement, the Bureau and MSHA jointly review and recommend health and safety research projects. The Bureau encourages cost-sharing cooperative efforts with industry. Such efforts reduce requirements for Federal funds to test concepts in mines and aid in technology transfer. Cooperative agreements with several mining companies allow the Bureau to conduct a broader base of research partially funded by the private sector. Cooperation with Canada, Yugoslavia, Great Britain, and West Germany on mining and technology exchange has proven beneficial.

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AUTHORIZATION: 30 U.S.C. 1-11

OBJECTIVES:

Research seeks to satisfy the Nation's mineral needs by accomplishing the following objectives:

- o Develop technologies to control airborne contaminants, noise, and other harmful physical characteristics in the mine atmosphere.
- o Provide technology to detect and mitigate hazardous ground conditions.
- o Provide technologies to reduce the number and severity of mine accidents, including those caused by human limitations.
- o Reduce accidents and maintain safety by introducing and applying high-technology research results to planned and existing mining methods and techniques.
- o Develop techniques to identify and control elements that could cause a catastrophic disaster in the mines.
- o Improve technology for mining domestic minerals that are important to the defense and economic well-being of the Nation.
- o Develop strategies and techniques for accessing ore bodies in environmentally sensitive regions.
- o Examine technologies that can be used to mine future sources of strategic and critical minerals.

RELATED BUREAU OF MINES ACTIVITIES: The Bureau's Generic Mineral Institutes program includes a mine systems design effort centered at the Virginia Polytechnic Institute and State University, with affiliated project work at the Universities of Alabama, Alaska (Fairbanks), Arizona, Idaho, Southern Illinois, Kentucky, Nevada (Reno), Utah, and the Colorado School of Mines; a respirable dust center at Pennsylvania State and West Virginia Universities, with affiliated project work at the Massachusetts Institute of Technology, Michigan Technological University, and the University of Minnesota; and a marine minerals technology center at the Universities of Mississippi and Hawaii.

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OCCUPATIONAL HEALTH

OVERVIEW: Underground mine workers are exposed to harmful levels of airborne toxic and noxious contaminants that cause respiratory diseases and long-term illness. Published reports now link cancer and other diseases to these contaminants, particularly diesel-engine soot, silica dust, and radon gas. Unless scientists identify ways to protect miners from these and other contaminants, future generations can expect to pay staggering compensation costs similar to those now paid to the victims of black lung and asbestos exposure. The Occupational Health research program is essential in keeping miners healthy since the Federal Government is responsible for the establishment, promulgation, and enforcement of mining health regulations.

Respirable particles represent one of the most serious health hazards because they can be inhaled and deposited deep in the lungs over long periods. Often the older, more experienced and productive miners will be removed prematurely from the workforce due to respiratory illness. Consequently, a long-term goal of the Occupational Health program is to reduce the respirable dust exposure of coal miners from the 1985 average of 1.6 milligrams per cubic meter by 30 percent before 1995. This reduction would allow coal mining and processing operations to meet Federal air quality standards, achieving a more healthful environment for workers without constraining production.

One major reason for the slow adoption of diesel power in underground coal mines is concern for the health of miners exposed to diesel exhaust. This exhaust is a complex mixture of compounds that varies greatly with fuel, engine type, load cycle, engine maintenance, and emission controls. One constituent of the exhaust is particulate matter, which is almost entirely less than one micrometer in size. When inhaled, these very small particles penetrate to the deepest regions of the lungs, carrying adsorbed hydrocarbons (soot). These particles, some of which are soluble, may also enter the blood stream, be carried to other organs besides the lungs, and may contribute to the development of disease. Therefore, researchers within the Occupational Health program are working with other Government agencies, mine operators, and equipment manufacturers to reduce diesel engine exhaust soot by more than 97 percent with new exhaust control technology.

Research under the Occupational Health program is also directed toward protecting mine workers from harmful noise levels, particularly in the confined, sound-reflective underground environment. Federal noise standards limit the exposure of workers to noise levels. The noise levels from many of the coal and mineral ore drilling, extraction, and transport operations are so high that workers cannot operate or work around the equipment for a full 8-hour shift without experiencing hearing loss.

PROBLEM: The additive or synergistic effects of contaminants found in very difficult to ventilate underground operations are becoming more apparent. For example, when the mine environment contains silica dust, dust standards become more stringent. Approximately one-third of underground coal mining operations (over 1,700 mines) have occupations or areas designated by MSHA that require more stringent respirable dust standards. Such standards could potentially affect over 5,100 underground coal mines.

The underground mining industry recognizes that diesel-powered equipment has advantages over electrically-powered machines. Its greater mobility and flexibility all promise increased safety. Use of diesel equipment, however, has some potential disadvantages. Two recent reports address the dangers presented by diesel exhaust exposure in underground coal mines:

(1) a Current Intelligence Bulletin on the *Carcinogenic Effects of Exposure to Diesel Exhaust*, by the National Institute for Occupational Safety and Health; and (2) the report of the MSHA Advisory Committee on Standards and Regulations for Diesel-Powered Equipment in Underground Coal Mines. Both reports point out the need for techniques to measure and control respirable contaminants in diesel exhausts. MSHA has asked the Bureau to address these items because the number of diesel engines in underground coal mines has increased more than fivefold since 1977.

The Federal Mine Safety and Health Amendments Act of 1977 established maximum noise exposure levels so that workers could be exposed to noise for an eight-hour shift without suffering hearing damage. In many cases, noise levels in underground and surface mining operations are now so high that many mining and processing operators can meet Federal standards only by reducing the worker's exposure time. Such reductions often involve production losses.

PROGRAM:

Progress in FY 1990 and Prior Years:

Techniques developed to reduce dust at the working face include: dilution of dust concentrations with ventilation, dust capture by water sprays, and use of new mining procedures that reduce workers' exposure to dust. The Bureau published a report that describes dust control techniques for longwall mines. Mine operators have achieved increased compliance with Federal regulations by using these techniques. A Bureau-patented linear cutting system, which was tested in a cooperating mine, generated less dust than traditional systems. It also can reduce costs at preparation plants that condition coal for final use by providing a courser product.

Research continued on the control and assessment of diesel engine exhaust. An optimum diesel engine exhaust control technique was developed using a ceramic diesel particulate filter (DPF) and a closed-circuit heat exchanger to reduce soot (Figure 1). The heat exchanger, which should soon be commercially available, removes about 40 percent of the exhaust particles and the DPF removes about 90 percent. Together, however, they removed about 97 percent (Figure 2). Research was conducted to extend the capabilities and applications of these control devices into more types of mines.

Researchers developed commercial retrofit techniques, such as partial enclosures, vibration isolation, and stiffening, to reduce noise made by existing mine equipment. Mine operators and equipment manufacturers can use these retrofit techniques on personnel carriers, auger-type continuous miners, chain-type conveyor systems, and diesel-powered vehicles including utility vehicles, dozers, front-end loaders, and load-haul-dump machines and in their maintenance shops. The Bureau developed a computer-based acoustical model that predicts noise levels at worker locations by analyzing various combinations of mining methods, equipment, and noise control techniques. The model, which was verified with selected acoustical field measurements, provides operators options for creating quieter mining environments.

Proposed Work in FY 1991:

The Bureau will continue to develop better techniques to reduce the silica content of coal mine dusts, and will start an additional thrust that will evaluate state-of-the-art controls. As these improved control techniques become available, they will be transferred to industry for the improvement of mine worker's health.

Efforts to control the soot from diesel engines will continue as the number of diesel units used in underground coal operations increases and Federal health and safety standards become more stringent. Researchers will begin designing a diesel tailpipe exhaust gas analyzer and will evaluate a personal diesel aerosol sampler. The exhaust gas analyzer will track changes in exhaust composition over time so that operators can identify trends indicating the need for specific engine maintenance. The personal sampler will distinguish between coal dusts and diesel soot so that mine operators will be able to identify the source of airborne particulates. Both instruments will help the Bureau and MSHA evaluate long-term effects of miner exposure to diesel soot.

Although excessive noise is associated with all phases of underground coal mining, the two most severe sources of noise are percussive drills and extraction equipment. Active noise canceliation (a technique which uses an "anti-noise" signal with opposite characteristics to "cancel" the original sound) will be used to quiet these offenders. The Bureau will evaluate the effectiveness of the best commercially available noise cancellation system in its mining noise laboratory.

Outyear Plans:

The production potential for longwall mining sections has not been realized. Peak daily advance rate in some longwall panels is as much as 120 feet, yielding about 25,000 tons of coal, which could become the average daily rate in the near future. The available respirable dust control devices, largely developed by the Bureau, can only handle the dust generated for sections producing about 8,000 tons per day.

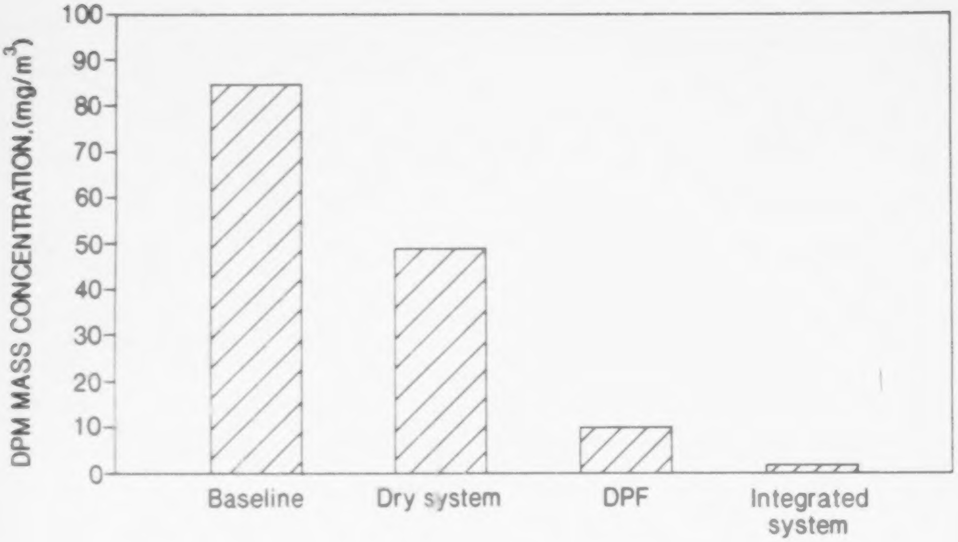

Figure 1.--The level of particulate matter emitted from diesel engines without any exhaust controls is about 85 milligrams per cubic meter. A dry conditioning system and a unique diesel particulate filter (DPF) developed by the Bureau remove about 40 percent and 90 percent of the diesel exhaust particles, respectively. When the two systems are applied in combination, about 97 percent of the particulate matter is removed from the diesel exhaust.

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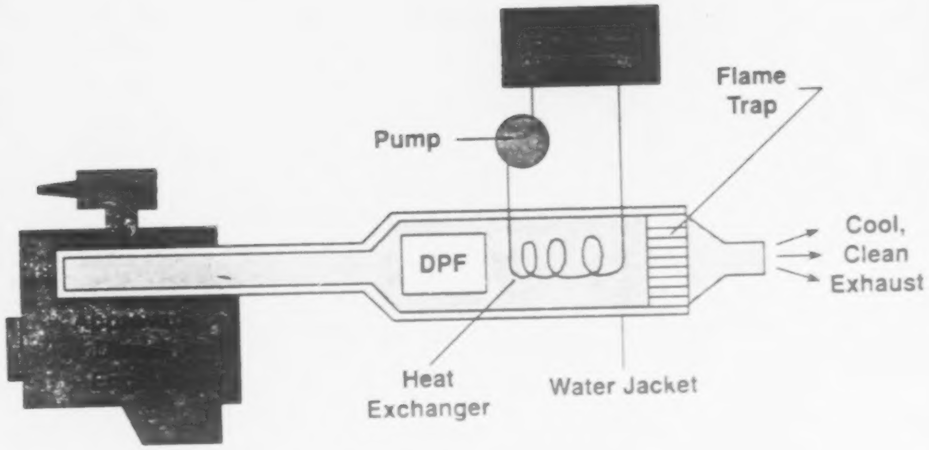
Pump
Flame Trap
DPF
Cool, Clean Exhaust
Heat Exchanger
Water Jacket

Figure 2.--A new integrated exhaust control system provides protection against both the health and the safety hazards of using diesel engines in underground mines. Particulate emissions are reduced with a diesel particulate filter, while fire hazards are controlled by lowering the temperature of the exhaust within a heat exchanger. The resultant exhaust is cleaner and cooler.

New techniques and devices will have to be researched to protect the health of the miners as these high-producing longwall sections increase in number.

DECREASE FOR FY 1991: (Dollar Amounts in Thousands)

		FY 1991 Base	FY 1991 Estimate	Change
Occupational Health	$	8,440	3,840	-4,600
	(FTE-T)	(84)	(65)	(-19)

The funding decrease in the Occupational Health program will be achieved by delaying planned research in the reduction of worker exposure to mining noise sources and eliminating the funding for the Generic Mineral Technology Center for Respirable Dust. An adequate, but reduced effort will continue to investigate silica and coal dust problems on remote control continuous miners.

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GROUND CONTROL

OVERVIEW: Control of groundfall hazards at mines is a major concern for the mining industry. In underground mines, roof and rib falls, floor heaves, and other disastrous events such as mountain bumps and rock bursts (sudden and violent ground failures in coal and metal mines caused by excessive pressure) can hurt or kill workers and curtail production. Slope failures at surface mines represent a similar problem. Keeping underground mine openings and surface mine pitwalls stable is a complex problem. The many interrelated parameters that influence stability include geologic conditions, in situ (in place) stresses, coal and rock strength, opening geometry, artificial supports, and mining sequences. In addition, operating factors and regulations indirectly influence opening stability by limiting design options. Effective ground control technology must consider all these variables.

Underground mining is a constant tradeoff between removing enough coal or ore from the deposit to making a profit and leaving enough material in place for support, or providing adequate means of artificial support, so that miners can work safely. In surface mining, the tradeoff is between quick, economical access to the coalbed or ore deposit -- access provided by steep pit walls that minimize the quantity of waste rock that must be removed -- and ensuring highwall and pit stability. Since geologic and mining conditions change from one place to another, accurate geologic and engineering information is needed for each mine to plan and design against potential structural failures.

Previous ground control research focused on determining and evaluating the impact of various geologic anomalies and rock characteristics on ground failures, and developing artificial supports to stabilize the ground. Certain aspects of ground control have been researched extensively and will not be included in future plans. For example, Bureau research has developed artificial supports to the point where their installation is a common practice in most mines. Private industry has assumed further developmental research.

Future ground control research will emphasize hazard detection, monitoring, and evaluation systems; ground control methods and techniques; and rock reinforcement technology. Each category is interactive; that is, the solution of one part has an immediate impact upon each of the remaining categories, and changes the technical approach and implementation of each accordingly. The ground hazard problem in mining will be solved when, and only when, all three interactive categories are solved together. Improved technology to detect, forecast, prevent, and control groundfall hazards will help the mining industry reduce injuries and deaths and increase mine production.

PROBLEM: In today's mines, groundfalls, rock bursts, and mountain bumps in underground mines and failures of steep slopes in surface mines are frequent events. These ground hazards are one of the leading causes of injuries and deaths in mining today. Ground hazards are not always obvious and easily detected. Even when groundfalls occur in non-working entries or drifts, they may reduce or close ventilation pathways creating the threat of a fire or explosion.

Groundfall-related incidents, such as roof and rib falls and floor heaves, have always threatened the safety of underground miners. Such accidents are responsible, on the average, for 40 percent of the fatalities that occur each year in underground coal mines. A large number of accidents that keep miners off the job can also be attributed to ground falls.

The overall goal of the Ground Control program is to provide the mining industry with technology for maintaining structurally sound, stable excavations or mine openings. The program is organized to protect miners by anticipating and controlling or eliminating groundfall hazards.

PROGRAM:

Progress in FY 1990 and Prior Years:

The ability of miners to predict potential hazards ahead of the working face and to detect impending ground failures at the work site during mining is critical to avoiding injuries and fatalities. Toward this end, the Bureau evaluated microseismic technologies in laboratory studies and in various mines. Microseismic technologies detect rock mass movements resulting from natural or mining induced pressures, and are an important aspect in the Bureau's research on predicting catastrophic ground failures such as rock bursts and mountain bumps.

Microseismic research at the Galena Mine in Idaho resulted in technology that signaled the possibility of imminent rock bursts on several occasions, giving the company sufficient time to evacuate the miners. The success of this research was based on the use of dense geophone arrays to monitor individual stopes in underground mines as opposed to using the same number of devices to monitor an entire mine. The Bureau has now designed and constructed modular stope monitoring systems that can be tied together into a minewide network. A prototype microseismic monitoring system was installed at the Galena Mine under a cost-sharing agreement between the Bureau and ASARCO, Inc. This new arrangement provides a more complete spatial picture of burst buildup activity in the mines.

An automated mine-wide microseismic system to detect rock movements that foretell of impending catastrophic ground failures was developed and tested in an operating coal mine. Microseismic events recorded by this system have given scientists and engineers a better understanding of the geologic mechanisms involved in mountain bumps.

The Bureau completed work on a rapid-scanning tomography technique (radar-imaging system) for detecting groundfall hazards in longwall coal mines. The Bureau also developed a cross-borehole seismic system (Figure 3) to detect and evaluate geologic hazards which contribute to ground control problems in mines. Future research efforts could combine the seismic and geotomographic systems and provide the technology to "see" into the rock and delineate hazards in advance of mining. These systems should contribute to improved ground control methods and provide a tool for future research on groundfall hazards. Such systems will be capable of directly contributing to user-oriented warning devices at the mines.

The occurrence of ground failures in coal mines beneath significant geologic and topographic features has been a cause for concern in the mining industry for many years. Several Bureau studies established relationships between these features and ground conditions -- relationships that can be used to improve ground control in mines. Advanced computer modeling studies, for example, indicated that the shape of a stream valley influences the stress in the underlying rocks.

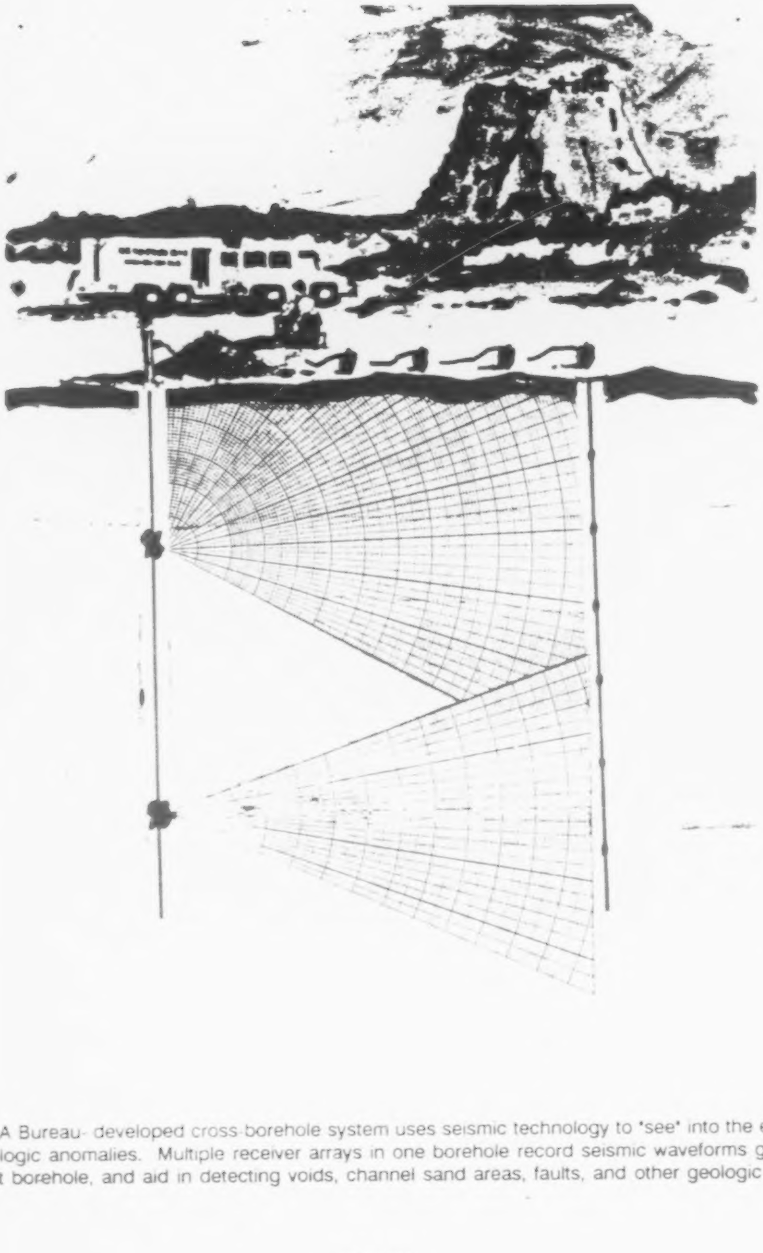

Figure 3.--A Bureau- developed cross-borehole system uses seismic technology to "see" into the earth and detect geologic anomalies. Multiple receiver arrays in one borehole record seismic waveforms generated in a distant borehole, and aid in detecting voids, channel sand areas, faults, and other geologic hazards.

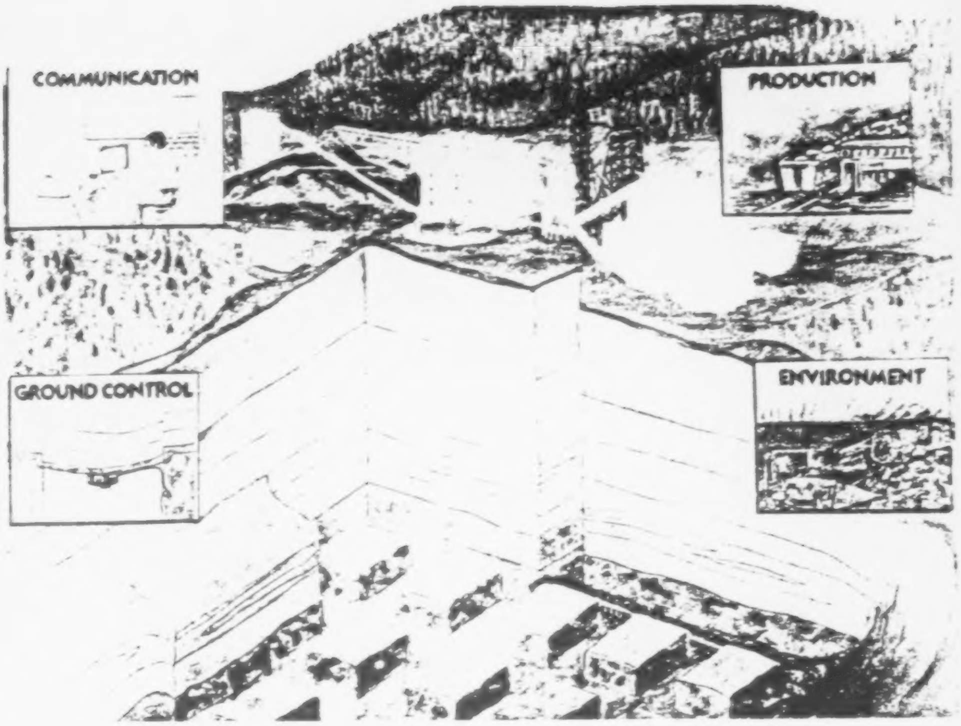
COMMUNICATION
PRODUCTION
GROUND CONTROL
ENVIRONMENT

Figure 4.--Mine-wide monitoring systems provide the potential for quickly alerting miners and mine operators to unstable ground conditions resulting from rock movement or geologic structure changes. The Bureau is evaluating geotechnical instruments that could be used with current monitoring systems to provide the needed information and required time for altering mining methods or selecting appropriate supports to overcome the problems.

Results from a remote sensing investigation in Alabama showed that lineaments (linear features on the earth's surface) derived from Landsat satellite images represent fracture zones that extend into underlying mines. This correlation indicates that remote sensing analysis methodology developed for Western mines is not site specific and can be extended to geologically different coalfields to define potential ground control hazards.

A completed study identified hillseams (the miner's term for weathered, disjointed rock masses) as the dominant cause of roof failures in the drift mines in Central Appalachia. The study provided geotechnical characterization of roof quality under shallow overburden that will help mine operators and regulatory agencies to develop scientifically-based mine design and ground control procedures.

In highly fractured rock, a safer mine environment can be achieved by installing supports in advance of mining. The Bureau demonstrated a unique concept in presupport by using grouted fiberglass rods which could be easily cut by machines during mining. This method of presupport not only stabilized the roof, but also provided access to reserves that were critical to the future of the mine. Research will continue in FY 1991 to verify the theory and mechanics of this new ground stabilization method.

Proposed Work in FY 1991:

More research involving hazard detection methods is needed to identify and define the conditions that lead to catastrophic mountain bumps and rock bursts. During FY 1991, the Bureau will investigate acoustical systems that could provide real-time measurements to determine the precise location of potential ground hazards. Advanced geophysical methods will also be investigated to detect subsurface geologic hazards and stress distributions at greater depths.

Groundfalls are complex, diverse events that involve a large number of variable parameters. Changes in mine design or adding artificial supports are strategies to control rock failures. However, evaluating the effectiveness of mine designs and support systems requires knowledge and quantitative measures of the critical stability parameters, potential failure mechanisms, applicable design theories, and support interaction. Research will continue in each of these areas. Computer modeling will be used to incorporate the individual results and rapidly test the effectiveness of proposed control measures.

Because of the vast amount of information required for ground control and support structures, mine operators rarely have sufficient time or resources to review all possible alternatives. To overcome this problem, the Bureau will pursue research in computer-based methodology and expert systems (programs using the computer to focus expert knowledge to solve problems). Development will begin on a computer-based system linking mine-wide monitoring systems with automated data analysis and expert system programs. The broad knowledge base and systematic decision rules which characterize expert systems can become a useful tool for analyzing ground control problems. Research to incorporate measurement of critical mine parameters into mine-wide monitoring systems will be emphasized during FY 1991. These systems will permit the immediate transfer of ground control information from the mine to an expert system computer at the mine office or other remote locations.

There exists within the coal mining industry, a growing controversy regarding the number of entries (gateroads) required to safely mine a longwall panel. While concerns regarding ventilation, dust and methane liberation, and the number of escapeways contribute to this debate, ground control issues remain of paramount importance and underlie all operational issues regarding gateroad performance. As part of an overall study of longwall panel development, tasks in several ground control research projects will investigate state-of-the-art designs for longwall gateroads systems under various geological and geotechnical conditions, and develop alternative approaches to ensure entry stability throughout the mining cycle under a wide range of mining conditions. Individual mining companies lack the diverse staff, which the Bureau has, needed to produce alternative solutions for complex ground control situations. Mine operators are, however, receptive to conducting cooperative research efforts with the Bureau to solve the difficult problem of maintaining safe gateroad entries at the underground mines with expanded coal extraction areas while improving production gains.

In FY 1991, the Ground Control program will be expanded to focus on technology that can reduce or eliminate groundfall hazards associated with new mining systems introduced to achieve greater mineral extraction in the coal industry. Larger longwall panels, for example, will require new technology to design safe supporting pillars. Today's design models cannot identify appropriate ground control strategies for such operations. Comprehensive research is needed to determine the geologic conditions and geomechanical risks associated with the new mining systems. The Bureau now conducts some research in this area, but these activities will be expanded.

Outyear Plans:

Planned Ground Control research efforts in the future will emphasize incorporating critical mine parameters into mine-wide monitoring systems to give miners and mine operators an immediate indication of potential groundfall hazards. Research in computer-based methodology and expert systems will continue with the goal of providing mine operators with the tools that can detect and correct groundfall problems. Bureau research will emphasize developing the technology to the point where private concerns could pursue further development and distribution to the mining industry. Successful development of advanced automated data analysis and mine-wide monitoring systems to immediately detect ground hazards during mining will provide the mining industry with the necessary tools to predict and eliminate catastrophic failures. This knowledge, in conjunction with improved or new mine designs and ground control methods, will provide a safer working environment.

DECREASE FOR FY 1991:

(Dollar Amounts in Thousands)

		FY 1991 Base	FY 1991 Estimate	Change
Ground Control	$	8,885	7,135	-1,750
	(FTE-T)	(126)	(111)	(-15)

Research investigations directed toward mountain bumps (coal) and rocks bursts (hardrock minerals), which were accelerated during FY 1990 will be reduced in FY 1991. Data will continue to be collected and evaluated from the recording and monitoring instruments previously installed at several mine sites. The planned funding in this area is adequate to achieve results that will lead to an improved understanding of the failure mechanisms associated with coal bumps and rock bursts. Efforts to establish a ground control information system, as well as other data collection activities, will be completed at the end of FY 1990. The decreased and completed activities will not affect the high-priority investigations scheduled to continue in the Ground Control program, but will result in a reduction of $1,750,000.

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HUMAN FACTORS

OVERVIEW: As late as 1950, almost one-third of the coal produced in the United States was loaded by hand. Although many tasks still require tremendous amounts of physical labor, mechanization has greatly reduced the physical demands placed on the miner. Today, mines are safer than at any time in the past and safety is a very important part of mine management.

However, as technology has advanced, new demands have been placed on the worker. With the advent of mechanization of the mines, the pace quickened, production increased, and an entirely new set of hazards was introduced to the mining industry. More attention, not less, must now be given to how people and technology interact and work together. Equipment and tasks need to be designed to match the capabilities and limitations of the workers who must perform, operate, and maintain them.

The Human Factors program seeks to enhance the safety and efficiency of the U. S. mining industry through research addressing human factors issues. Over the next three to five years, investigations will focus less on specific equipment design deficiencies and will concentrate more on aspects directly related to the mine workers themselves. This research will include studies on improved safety training and evaluation of skill retention in recognizing hazards and donning self-contained self-rescuers, analysis of judgment and decision-making in emergency and nonroutine situations, investigations of safety management and its interrelationship with production, and the incorporation of human factors considerations in the development of emerging technologies such as automation and robotics.

PROBLEM: The high standards set for providing a safe and healthful workplace are especially difficult for the mining industry to attain, since mines are generally hazardous environments and miners are forced to work in confined areas with large, complex, fast-moving machinery. In this precarious setting, an equipment failure or a minor human misjudgment can readily culminate in an accident, injury, or fatality. These accidents impose an enormous burden on mine personnel and the mining industry. The costs in terms of human suffering are impossible to calculate. In financial measures, injuries and fatalities cost the mining industry over $1.7 billion from 1981 through 1987.

Over the last 25 years, industrialized nations have increasingly realized that people are the key to both safety and productivity. Various studies conducted by the mining industry and Government agencies have concluded that approximately 85 percent of all mining accidents are due to human error. The typical human-error accident investigation generally classifies the cause as either unsafe acts (i.e., operator error) or unsafe conditions, or as due to operator error or equipment failure. This simple classification system consequently attributes a high percentage of accidents to the operator. Such analyses leave out the all-important question of what in particular caused the operator to err. To effectively correct the human error component in accidents, it is necessary to discover these causes and institute countermeasures based on sound scientific information. Often the cause can be traced to inadequate or improper instruction and training, deficient management policies, or faulty equipment design. For example, the seating position and visibility provided by some operator's compartments on mining equipment are so poor that operator errors and injuries are not only possible, but very likely to occur. Similarly, if safety training is inadequate, a mine worker may not be able to recognize a potential hazard and subsequently avoid it.

The Bureau believes that human factors research on mine worker performance and safety can successfully identify the specific human behavior patterns and the underlying causes that contribute to accidents. By providing the mining industry with the technology to reduce injuries, the associated exorbitant costs can also be reduced.

PROGRAM:

Progress in FY 1990 and Prior Years:

The Bureau has worked closely with MSHA and the coal mining industry to provide more effective training to miners in the donning of self-contained self-rescuers (SCSR's). With the development of the new belt-wearable SCSR, the donning procedure was slightly modified to accommodate the new SCSR design while retaining the sequence for quick isolation of the miner's lungs. Numerous latent-image training exercises (in which the answer is revealed by rubbing the appropriate space with a special pen) were developed, field-tested, and ultimately provided to the MSHA National Mine Health and Safety Academy for publication and distribution to the mining community. These exercises are designed to enhance judgment, hazard recognition, and first-aid skills needed by miners in a variety of critical situations. Interviews of workers who escaped from an underground coal mine fire were completed and their narratives were analyzed to identify factors involved in their successful escape. Two of the mine employees were videotaped during their interview and this tape was sent to MSHA for use as a training film.

Studies on manual materials handling showed that lifting capacity is considerably reduced in a kneeling posture as opposed to a stooped position. This finding has significant implications for manual lifting in low coal mines. Shiftwork research found that particular shift rotations adversely impact workers' sleep habits, eating satisfaction, and self-perceptions of well-being. Based on these findings, suggestions for improved shiftwork schedules and coping strategies have been devised. Computer modeling of operator compartments has been effective in designing seating arrangements for shuttle cars that are not only more comfortable but provide better visibility for the operator. These designs can reduce injuries by eliminating operator fatigue from vibration and awkward working positions and by allowing quick recognition of hazards through clear sight lines.

Proposed Work in FY 1991:

Although a large amount of sophisticated equipment is already utilized in mining, in the future miners will interact with even more complex machinery. Experience in other industries has shown that the incorporation of human factors design considerations into the overall system tends to increase the success of any new technology. Therefore, the human factors program will focus on the human implications of both introducing new technology and on managing technological change in mining. Areas to be assessed include miner acceptance of computer-control, impacts on human resources, organizational and hazard management techniques, training and education needs, and new requirements for mine worker performance and safety.

Investigations into the underlying causes of accidents will continue, although the emphasis will shift from safer equipment designs to aspects associated primarily with the worker. Computer modeling of safer operator compartments for surface haulage vehicles and underground diesel haulers and improved equipment configurations for ease of maintenance will continue in order to eliminate accidents created by the interface of the miner and the machine. The behavior of miners will be examined to discover the underlying causes of human error accidents. The fact that an accident occurred because a miner went under unsupported roof is not a sufficient explanation of the accident cause; an understanding of why that person knowingly put himself in such jeopardy must be achieved to prevent future occurrences. The miners' use of strategic knowledge in the workplace will be evaluated and enhanced through improved problem-solving and hazard recognition training. This training is aimed at generating a safer, more efficient, flexible workforce that can respond positively to nonroutine mine situations and emergencies. Researchers will continue assessing the metabolic stress of lifting tasks with the goal of reducing back injuries, particularly in low-seam coal mines.

Outyear Plans:

The Human Factors program will focus on training for nonroutine and emergency situations, management strategies during mine disasters, and hazard control for small mining operations. Research will continue to emphasize the design of equipment to fit the operator and the integration of computer-assisted systems into the mine workplace. The research will address the following major concerns: 1) delineation of how safety, worker performance, and productivity are influenced by the work environment, equipment/technology, task requirements, and organizational factors; and 2) development of human engineering design innovations and improvements to reduce or eliminate identified man-machine-environment interface problems.

DECREASE FOR FY 1991:

(Dollar Amounts in Thousands)

		FY 1991 Base	FY 1991 Estimate	Change
Human Factors	$	3,154	2,696	-458
	(FTE-T)	(45)	(41)	(-4)

The Pennsylvania State University will complete a 5-year contract study covering coal mine injury analysis at the end of FY 1990, resulting in a decrease of $300,000 for the Human Factors program. This effort will have a significant impact on reducing the contribution of human error in mine accidents. The remaining reduction will be achieved through decreasing efforts in hazard management for small mines and the effects of changing shifts, and focusing on high-priority research to improve the fit between the highly skilled miner, equipment and conditions, new technological systems, and the management of mine operations.

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MINE SAFETY SYSTEMS

OVERVIEW: The goal of Mine Safety Systems research is to provide technological improvements that will enable the mining industry to reduce accidents and maintain safety in haulage, materials handling, equipment, and electrical areas of mining. Achieving this goal involves removing workers from dangerous situations as well as applying high technology research results to existing mining methods and techniques. Research efforts are fueled not only by recent technological changes and competitive pressures facing the mines, but by the common desire and determination to overcome the challenges faced in revitalizing the mining industry.

Mining in the United States has become increasingly mechanized. This trend is assuming greater importance because of the Nation's need to exploit deeper and more marginal mineral deposits if it is to ensure itself an adequate and dependable supply of minerals and industrial materials. The efforts of the Mine Safety Systems program to remove workers from hazardous areas are in keeping with this trend. The Bureau will produce techniques and systems that will reduce current hazards while not introducing any new hazards.

PROBLEM: Huge equipment moving thousands of tons of material, around-the-clock operations, the harsh underground environment, and adverse weather conditions at surface operations all contribute to the hazardous nature of mining. When the three fundamental elements in mining--the worker, the mining machinery, and the mining conditions--interact, numerous hazards are created through human error, flaws in the equipment, or deficient mine design. These hazards have manifested themselves as non-fatal injuries that have been increasing over the past decade.

Fatal injuries at surface mines have remained nearly constant, averaging 47 deaths each year during the last six years. Total injuries, however, increased by 82 percent, rising from 5,363 in 1983 to 9,775 in 1988. Deaths caused by accidents involving powered haulage of ore and materials led the list, accounting for 36 percent of all fatalities during this 6-year period and 45 percent in 1988 alone. Haulage is not only responsible for the largest number of fatalities and injuries, it also has been identified as a primary bottleneck in production; more coal and mineral ore can be mined than transported from the production area to the first transfer point.

Since the development of truly autonomous equipment is still a future prospect, current mining machines and mining methods will be used in the mines for many years. A continuing need exists to reduce operating uncertainties and minimize accidents in the mines. In short, technology must be made available that will improve conventional mining systems and operations and reduce or eliminate any inherent hazards.

PROGRAM:

Progress in FY 1990 and Prior Years:

Development of the Ground Fault Relay (GFR) system met a major milestone in reducing the number of electrical fatalities in underground mines. The system senses and interrupts deadly ground fault currents that could electrocute operators and workers handling or working around electrical equipment and cables. The system deactivates the electrical power when workers come in contact with energized conductors. Mine-worthy prototypes were designed, constructed, and laboratory tested and the system was made available for testing in operating mines (Figure 5). To encourage commercial manufacture, the system design was fully documented in a Bureau report entitled, "Sensitive Ground Fault Protection For Mines."

A prototype device that alerts the operator of a front-end-loader to unstable ground conditions that may cause the loader to roll over was designed and built. The device sounds an alarm when a hazardous situation exists due to uneven tire-to-ground forces. Injuries due to equipment rollover represent the largest single category of accidents in surface mines.

Many accidents are associated with the use of large continuous conveyor belt systems to haul coal and mineral ore. Injuries associated with conveyor belt haulage systems should be reduced by the Bureau-developed pneumatic conveyor belt cleaning device. The device reduces the amount of material spilled from the high-speed belts, eliminating a hazardous clean-up job. A cleaner environment should reduce roller bearing failures and increase conveyor belt life. Reduced bearing failure and increased belt life will decrease the number of injuries that occur during high-risk maintenance operations. A patent has been applied for and commercial concerns have investigated the manufacture and marketing of the device.

Successful development of structures to protect equipment operators in thin-seam (less than 48 inches) coal mining continued with computer-aided design and evaluation of an operator compartment for a coal haulage vehicle. Thin-seam operations not only interfere with the ability to transport coal, they also reduce operator comfort and visibility, thereby increasing the possibility of an accident. The new compartment was evaluated through a computer-aided design system that considered operator safety, coal capacity, attachment to the vehicle, visibility, and overall design limitations. The design was tested in a mine in cooperation with an equipment manufacturer and coal operator.

Proposed Work in FY 1991:

In the past, the Mine Safety Systems program focused on developing solutions to specific hazards that cause accidents. The FY 1991 program will continue to address specific hazards by designing techniques to relocate workers from the most hazardous operations and to provide safer coal and mineral ore transport throughout the mine. Along with these efforts, the program will address electrical hazards that are common to nearly all surface and underground mining systems and to investigate the disaster potential presented by fatigued, in-service hoisting ropes used to transport workers and materials.

Today's mining methods expose miners to many hazards that can only be partially controlled and not eliminated. To reduce the risks and to ensure a safe, healthful environment for our Nation's miners, a systems approach will be applied to investigations involving the various unit operations of mining systems, particularly the man/machine interactions. During FY 1991, research will focus on powered-haulage situations that have high accident rates. Expert systems will integrate human and machine information and eventually form the framework for remote mining systems.

Care must be taken to ensure that new hazards are not created by the introduction of new, "high-tech" mining equipment. Research will continue to help ensure that mine electrical trailing cables can provide the required power to operate remote equipment over greater distances.

Maintenance activities are a major contributor to accidents and injuries, and electrical failures play a significant role in overall mine maintenance activities. Preliminary research illustrates the feasibility of a monitoring system that can predict in advance the impending failure of large motors used in mining so that corrective action can be taken without interrupting the normal mining operation, thus avoiding the type of maintenance activities that cause accidents. High sensitivity instrumentation is being used with advanced computer processing techniques to produce a motor failure prediction system that would be usable in the mining environment.

The controls and the circuits of newly-developed mine/electrical equipment must be intrinsically safe so as not to overheat or generate sparks that could ignite explosions and fires in underground mines. Research will investigate the use of fiber optics to transmit low voltage signals throughout the mine and detect the various gases and environmental conditions that must be monitored in underground operations to ensure a safe environment.

New ore haulage and transport techniques and systems for surface mines will be investigated to reduce the number of accidents in coal and metal and nonmetal operations. The techniques and systems will be designed to decrease the need for contact between workers and equipment. Systems that provide increased reliability and less maintenance and use operator-assisted remote control and new haulage

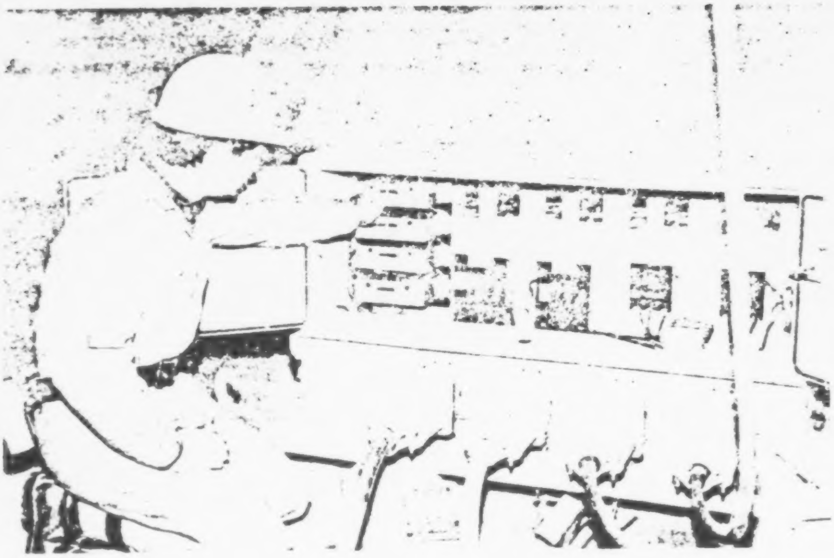

Figure 5.--Underground mines are equipped with high-capacity electrical distribution systems to power the large mineral extraction and transport equipment. A ground fault relay system designed by the Bureau senses and interrupts deadly electrical currents that could electrocute miners while working on equipment or cables.

concepts should meet this goal. Safer haulage operations will also help increase productivity by decreasing downtime for maintenance and allowing more continuous haulage operations.

Outyear Plans:

Long-term research will continue to integrate automated mining techniques with mine-wide monitoring systems to protect miners from hazards. Physical correlations relating the mining system parameters of drilling, roof bolting, and machine movement to workers' performance and decision-making processes will be determined. These physical correlations will provide the information required to model the actions of the equipment operators. Research will evaluate the feasibility of the new surface mining ore haulage and transport techniques and systems.

New mining concepts that are evolving for deep metal and nonmetal mines and longwall coal operations could expose underground workers to new and different safety hazards. Research will address the new electrical and haulage issues associated with these new methods. As improved mining methods are introduced into the mines, Mine Safety Systems research will identify and evaluate the safety issues of these improved methods.

DECREASE FOR FY 1991:

(Dollar Amounts in Thousands)

		FY 1991 Base	FY 1991 Estimate	Change
Mine Safety Systems	$	5,041	4,441	-600
	(FTE-T)	(72)	(67)	(-5)

Research efforts for the hydraulic coal injector, electrical systems, and shock and vibration evaluation of safety control devices will be completed at the end of FY 1990. The technology will be transferred to private industry and further Federal funding will not be required. Efforts to demonstrate a new vertical hydrohoist air transport technique for coal will be reduced and extended over a 2-year period. The completion and extension of research activities will result in a balanced program for Mine Safety Systems and a decrease of $600,000 in funds.

* * * * * *

MINE DISASTER PREVENTION

OVERVIEW: Unlike most mine accidents, a fire or explosion has the very real potential to develop into a major mine disaster, resulting in substantial loss of life and injury as well as significant loss of property and valuable minerals resources. Great strides have been made in recent years to reduce the potential for mine disasters, as evidenced by the steady decline in the number of fires and explosions and the number of related injuries and fatalities recorded over the past four decades. However, fires and explosions are still a major threat to the Nation's mines, and the mining industry must have the most effective technology possible to prevent or minimize the chance of these occurrences developing into disasters.

The Bureau has a balanced program of Mine Disaster Prevention research which is directed toward the development of technology that can either prevent disasters or help miners survive them. Research is aimed at the prevention and/or suppression of fires and explosions because these events pose the highest risk for catastrophic situations. Research areas include early detection of fires, faster warning of personnel, more effective fire fighting, and improved technology for suppressing fires and explosions. The Bureau will also develop technology that could lead to improved explosives; to more nontoxic, fire-resistant mine materials; to more useful ways of maintaining escapeways and increasing the miner's chance of survival; to and more rapid ways to seal fires. These efforts will provide the essentials for the safe escape and survival of miners from fire and explosion situations.

Preventing one mine disaster every 4 years will save the industry an average of $25 million every year. Eighty major mine fires occurred from 1986 through 1987. Each had the potential of developing into another Wilberg disaster (Utah, December 1984) in which 27 miners died in an underground coal mine fire. Even when no deaths are involved, fires cause tremendous losses. For example, a fire in Beth Energy Mines' Marianna No. 58 mine killed no-one, but it closed the facility, resulting in an annual loss of $30 million in coal production and $12.5 million in wages. Before the year 2000, new approaches to mitigate, or even eliminate, the causes of mine disasters will reduce by 25 percent the number of fires, explosions, and gas outbursts that become catastrophes with a commensurate reduction in the loss of life, mineral resources, and mining property.

The long-range strategy of the Mine Disaster Prevention program is to emphasize prevention research. If an accident or hazardous situation can be mitigated or even avoided, the risk of death or injury to miners can be substantially reduced. Therefore, research to reduce the potential for fires, explosions, and gas outbursts will be pursued. Since, however, the potential for fires, explosions, and gas outbursts is not expected to be eliminated completely in the foreseeable future, additional research will be conducted to increase the chances that miners can safely escape and survive a mine disaster.

PROBLEM: Mine disasters are a serious threat to life and property. When a mine fire or explosion occurs, the risk of fatalities or serious injuries is substantial. No other accident in mining carries such major consequences as these catastrophic events. Although mine disasters have been reduced significantly over the years, the potential for them still exist and must be faced by miners each day. This fact was brought home abruptly September 13, 1989, when a methane explosion in a Kentucky coal mine killed 10 miners.

The Nation's mineral resources are at risk as well. A major mine fire or explosion can result in a mine having to be sealed for extended periods of time, if not permanently. The monetary loss in production and/or reserves can be considerable, and based upon the incident trend over the past 10 years, mine disasters from 1990 through the year 2000 could cost the mining industry as much as $1.2 billion.

Many mine disasters that have occurred over the years have started with an accident or hazardous situation that got out of control. To minimize the risk of a disaster, mine operators must have the technology to be warned of and recognize potentially hazardous situations, control these situations before they get out-of-hand, and provide a safe means of escape for miners who may become involved in such incidents.

Improper use of explosives presents possibly the most risk due to the innate dangers of this powerful mining tool. A serious problem is the tendency for permissible explosives to misfire when being used improperly to blast coal. Such an explosive failure can result in a blown out shot whose ejected hot particles can ignite methane gas and cause a major mine explosion. This type of failure can also occur in gassy, non-coal mines as well. Research has shown that the misfiring of permissible explosives is related to the tendency of some explosives to be desensitized by shock waves traveling between boreholes in the blast pattern. Some explosives are damaged by these shock waves and may not detonate; some are damaged but recover their sensitivity; while others are unaffected. To improve the performance of explosives, research is needed to determine the mechanisms responsible for misfires.

PROGRAM:

Progress in FY 1990 and Prior Years:

Researchers developed a fire warning system for underground mines that transmits an electromagnetic signal through the mine rock to underground workings. There, miners equipped with miniature radio-type receivers are made aware of the presence of a mine fire or other emergency situations. The microreceiver can be mounted within and powered by a cap lamp battery, or mounted on and powered by the batteries of mobile equipment. This system should be commercially available in late FY 1990.

A series of briefings on mine fire preparedness was initiated in FY 1989 to enhance the industry's awareness of the dangers of underground mine fires and promote the latest methods and technology to prevent, detect, and suppress fires.

Full-scale laboratory evaluation demonstrated the need for improving the fire resistance of man-made materials used in conveyor belts, ventilation ducts, and ventilation curtains. This work also indicated that materials with superior fire resistance can be developed and the relative toxicity for these materials determined. Manufacturers responded by participating in full-scale evaluations of the fire resistance and toxicity of their products. Full-scale tests measured the fire endurance of various types of stoppings used in the industry for fire control and identified coatings that can improve that endurance. In addition, a test procedure was developed for evaluating and identifying more effective liquid and foam fire extinguishing agents. Improved fire detection and warning strategies were identified. A prototype instrument for detecting fires in the presence of diesel emissions that is an order of magnitude more sensitive than the best fire sensors available was also developed.

Explosives research concentrated on the development and implementation of new tests to assure the continued safety of permissible blasting practices. A study that explored the safety of delay blasting provided MSHA with specific recommendations for improving this type of coal mine blasting. The resulting procedures should reduce the frequency of misfired explosives. This, in turn, will reduce the potential for blowout shots that can cause explosions. An added benefit in this improved performance is better fragmentation and an increase in mining efficiency. A 5 percent improvement in explosive performance translates into a $37 million-a-year savings in explosives costs to the industry.

Techniques were developed to measure gas content of evaporite formations (salt, potash, and trona) to predict methane hazards in advance of mining. In addition, a process to predict potential gas outburst zones in domal salt mines was developed and validated. The process is now used in a number of salt mines.

In coordination with MSHA, NIOSH, and the mining industry, a prototype belt-wearable self-contained self-rescuer (SCSR) was developed. The new device, which can be attached to the miner's belt, provides 60 minutes of oxygen. Existing units are so bulky and heavy that most miners are reluctant to wear them. Evaluation of the reliability and mine-worthiness of the prototype belt-wearable SCSRs was completed, providing experimental confirmation that the new technology works under realistic mine conditions. The new device received NIOSH certification and approval and is now commercially available to the mining industry. It provides an alternative to the current device at approximately the same cost.

Proposed Work in FY 1991:

Research will improve the technology to control mine fires. This effort will involve developing techniques for rapid assessment of fire location and size as well as methods for early fire detection; improving the mobility and effectiveness of manual fire-suppression systems and the reliability of automatic fire-suppression systems; and providing the miners with proper training in the use of this equipment. Research to predict and control spontaneous combustion, particularly as it relates to longwall mining, will continue. Criteria for mine evacuation and escape strategies will be developed in conjunction with this effort to assure escape if the fire cannot be controlled. Techniques for the rapid, perhaps automatic, sealing of uncontrolled fires will be developed.

The Bureau will develop work practices for the safe use of new, more powerful explosives that provide more efficient rock fragmentation. Additional effort will be directed toward the problems inherent in blasting in gassy noncoal mines. Increased attention will be paid to the tendency of permissible explosives to misfire in delay blasting in underground coal mines. Research will be conducted on the electrical and mechanical hazards of both electric and nonelectric explosion initiation systems. Blast design computer codes for improved efficiency and safety in the coal and noncoal mining industry will be researched. The approval testing of permissible explosives will continue and the field behavior of permissible explosives, particularly water gels and emulsions, will be monitored to assure conformance with the permissible schedule and to uncover any new problems associated with their use. This research will significantly reduce explosives-related injuries--injuries which cost the mining industry over $2.4 million in 1986.

A new method for determining the methane gas content of coal will be validated. Research will be expanded to address methane drainage strategies for larger longwall panels. Research to determine methane storage and migration characteristics in oil shale will be expanded. Scientists will search for correlations between organic content and methane parameters in an effort to develop models for predicting the methane hazards associated with this material.

The deployment of the belt-wearable SCSRs will be monitored to determine if the deployment guidelines and training materials developed for these units are adequate. In addition, a program of SCSR evaluation will continue, with particular emphasis on the newly deployed belt-wearable SCSRs.

Outyear Plans:

Research accomplishments will emerge that will help the industry avoid a repetition of fires like those that occurred at the Wilberg Mine in December 1984; at the Colorado Westmoreland Mine in January 1987; at the Marianna Mine in March 1988; and at the Sunshine Mine in April 1988. Computer models of mine fires will be developed incorporating the latest methods and technology to prevent, detect, and suppress fires.

Explosives research will concentrate on solving probems involving water gel and emulsion explosives. The Bureau will establish new approval schedules for water gel and emulsion-type explosives which sometimes behave differently from conventional explosives. Researchers will also investigate malfunctions of coal mine explosives and examine blasting designs and practices that often misfire.

DECREASE FOR FY 1991:

(Dollar Amounts in Thousands)

		FY 1991 Base	FY 1991 Estimate	Change
Mine Disaster Prevention	$	7,207	4,657	-2,550
	(FTE-T)	(102)	(79)	(-23)

Research activities in self-contained self-rescuers, methane control, explosives, and mine fires will be reduced. FY 1990 funding allowed completion of a number of tasks in these areas ahead of schedule and reduced the funding requirements for FY 1991. The funding proposed for FY 1991 is sufficient to continue the mine disaster prevention research program at an adequate level.

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EXPERIMENTAL FACILITIES

OVERVIEW: Specialized full-scale underground and surface mining test facilities are required to support ongoing Bureau research. Operation and maintenance of the Bureau's experimental mines at Bruceton, Pennsylvania, and the Lake Lynn Laboratory at Fairchance, Pennsylvania, will continue in order to provide the unique facilities required for the full-scale investigation of technical problems. These facilities are essential to the Bureau's research program and allow detailed time-consuming experiments that often cannot be performed in cooperator mines because of legal and production restrictions. This type of facility does not exist in other Federal agencies or in the private sector.

PROBLEM: Full-scale validation of laboratory research is required to ensure that technology developed in the laboratories will perform as intended in the mines. Some of this validation effort can be conducted in cooperator mines, although mine operators are understandably reluctant to offer their mine to the Bureau for experiments that could put the mine or personnel at risk or restrict production.

PROGRAM:

Progress in FY 1990 and Prior Years:
The unique facilities of the Lake Lynn Laboratory and the Bruceton experimental mines were used for full-scale mine experiments involving research such as: evaluating underground mine seals to determine failure pressures during explosions; communications equipment trials; conveyor belt burn tests; continued testing of the remote device for making face measurements of methane; evaluating the effectiveness of a face explosion suppression system on continuous miners; defining the rock dust requirements for preventing coal dust explosions in wide entries; developing effective explosion barriers for single entries; and evaluating the incendivity of new explosives for coal, oil shale, and sulfide ore mines.

Additional full-scale mine experiments included performing over 60 full-scale mine explosions to identify hazardous mine environments; designing expert systems for effective mine ventilation; monitoring sealed mine fires to determine earliest time for a safe reopening; evaluating robot movement underground; evaluating the performance of self-contained self-rescuers; and determining the fire endurance of mine stoppings.

A series of open industry briefings on mine fire preparedness were conducted for both industry and MSHA representatives at the Lake Lynn Laboratory. The briefings included demonstrations of full-scale conveyor belt fires and fire detection and monitoring systems that could be presented only at a facility such as the Lake Lynn Laboratory.

Proposed Work in FY 1991:
The presentation of open industry briefings on mine fire preparedness to MSHA and the industry will continue with additional full-scale demonstrations at the Lake Lynn Laboratory. The Bureau's test facilities at Bruceton and the Lake Lynn Laboratory will also be used to conduct full-scale experiments aimed at evaluating the fire resistance of new conveyor belt materials developed by industry; developing improved fire extinguishing agents for fire fighting; developing fire barriers for longwall and low coal mines; evaluating mine-wide fire detection and warning systems; evaluating new prototypes of the remote methane measuring device, diesel discriminating fire sensor, and dust deposition meter; and developing inflatable, explosion-proof bulkheads for rapidly sealing mine fire areas. These unique facilities are vital for evaluating and refining new technology before it is subjected to more expensive, longer-term evaluation in operating mines.

Outyear Plans:
The Bureau will continue to conduct full-scale experiments at its test facilities at Bruceton and the Lake Lynn Laboratory. Future efforts will include the demonstration of automated and robotically controlled mining equipment and systems for enhanced operator safety; demonstration of rapid shaft sinking methods to define safety implications; backfilling demonstrations for improved ground control and subsidence control; evaluation of rapid fire detection and control prototypes to mitigate fire hazards; evaluation of ventilation and control techniques for healthier underground work areas; demonstration of environmental control techniques to reduce mine water discharge; and testing of innovative blasting methods prior to underground trials. In a long-term cost-saving effort, the Bureau will economically evaluate the purchase of the Lake Lynn Laboratory, which currently is leased.

No increase in funds is requested for 1991.

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ADVANCED MINING SYSTEMS

OVERVIEW: Improving mining efficiency to keep the Nation competitive and miners employed, conserving minerals for the future prosperity of the Nation, developing domestic supplies of critical metals, and mining in ways that protect the health and safety of the miners – all are problems for which the United States must find effective solutions. The Bureau believes new mining technologies must be found if these problems are to be solved. Since new technology can affect all of these problems, using a systems approach that addresses several problems should yield the most useful results at the least cost. To implement this philosophy, the Bureau formed Advanced Mining Systems (AMS) in FY 1988.

AMS has its roots in coal mining productivity research transferred to the Bureau from the Department of Energy and in early legislation authorizing research on increasing the efficiency of mining. To implement a systems approach, the Bureau expanded the objectives of AMS to address a multitude of problems related to future mining techniques. Health and safety is a consideration in developing any new mining technology concept just as is reducing the dependency of the United States on foreign countries for strategic and critical minerals. The Bureau believes it must use and build on technologies it has developed for solving specific problems to ensure that future mining systems meet efficiency, conservation, environmental, and health and safety requirements. The Bureau's scientists and engineers can rethink how minerals should be recovered and can look beyond the constraints of current equipment design or technology. Their objective is to solve as many of the Nation's mineral problems as they can with the mining concepts they develop.

A major thrust of AMS is investigating technologies that will help ensure an adequate supply of domestic minerals and coal at competitive costs. As part of the thrust, the Bureau is examining computer-assisted mining technology that can increase efficiency, reduce worker injuries and fatalities, and protect their health. The goal is to place the workers who operate mine equipment in a protected area, away from danger. Due to the complexities of mining, mine workers will always be needed to oversee computer-assisted equipment and provide support services such as maintenance and supplies.

PROBLEM: Our Nation imports almost all of the key minerals (chromium, manganese, platinum-group metals, vanadium, and cobalt) necessary to build jet engines for domestic transportation, the space shuttle to explore other planets, and even mundane items such as the roller bearings used in almost any machine with moving parts. Without these vital minerals, our critical base industries and Nation could not exist as we know them today.

The United States does have domestic deposits that can provide the critical metals and very likely the minerals necessary to produce future advanced materials. These metals, however, cannot be recovered economically with current technology. The Bureau believes new technology is needed to reduce our reliance on imports of critical metals. Although it is unlikely that the United States will ever be self-sufficient in most of these metals, a core domestic mining industry will help limit severe economic damage from supply disruptions. New technology can also minimize the time needed to start up a mining operation in a crisis. Research on new technology for the mining industry will allow the Bureau to emphasize efficient technology that offers improvements in health and safety.

Energy, another necessity, is plentiful in the form of coal. Coal accounts for 82 percent of U.S. energy resources but provides only about 24 percent of the energy we actually use. Petroleum imports continue to rise, making the Nation vulnerable to supply disruptions.

To ensure the Nation a stable supply of energy and to decrease our negative balance of payments from imported oil, we must minimize the cost of producing coal. To keep coal competitive, new technologies must be found to lower the cost of producing coal. Automation and computer-assisted technologies have the potential to increase the efficiency of mining coal by reducing nonproductive time. (Continuous miners, for example, cut coal only about one-third of the time and are nonproductive about one-half of the time due to breakdowns, power failures, machine maneuvering, and other delays.) The Bureau believes new technologies can make mining more efficient. The workers will also benefit as they will move out of the hazardous areas and work at safer, protected sites.

Although computer-assisted technologies are available from other industries, they cannot easily be adapted to mining. For instance, a robot that welds cars together on an assembly line works in a controlled environment with known reference points. The cars passing by are always at a known location when the welding occurs and can be positioned precisely each time. In a mine, logistics are much more complicated.

Reference points continually change, making it difficult for the mining system to determine its location and follow a mining plan. A mud floor, for example, can cause the machine to sink or the mine roof can move causing unforeseen falls of rock. The mining machine moves constantly in reference to the haulage system that transports the material to the surface for processing. Support services, such as ventilation, are needed to keep explosive hazards such as methane and coal dust from building up. Coordinating and completing the many tasks involved in mining requires constant attention and an understanding of task priorities and interactions among tasks. The Bureau believes research can solve these problems and plans to provide industry with appropriate information and guidelines. Industry can then design and build durable mining equipment that is more efficient.

The Bureau believes that computer-assisted mining systems will always require human oversight to work effectively. The constantly changing mine environment and the complicated tasks involved in mining increase the cost of the sensors and computers needed. The cost of such a system would easily become prohibitive if every conceivable mining situation were addressed. Using a human to check on various parts of the system should keep costs more reasonable.

The goal of such research is both to increase efficiency and to move workers to a safer and more secure place. Before the goal can be reached, a series of computer-assisted subsystems that address specific tasks must be developed and incorporated in a mining machine such as a continuous miner. These will include, for example, subsystems to detect failures of equipment, optimize cutting of the minerals, provide guidance, provide ventilation, and detect unsafe conditions. Since these subsystems will become available at different times, the Bureau plans to design each subsystem so that it can operate independently, thus allowing the technology to be used on current mining equipment. The Bureau believes these subsystems will eventually become standard on mining machines and that computers will control more and more functions of the machine, much as computers control emissions in automobile engines. As technology for the subsystems becomes available, equipment designers will gain latitude in placing mine workers and determining what tasks must be done at the mine face. Mining efficiency will benefit as well as worker health and safety.

PROGRAM:

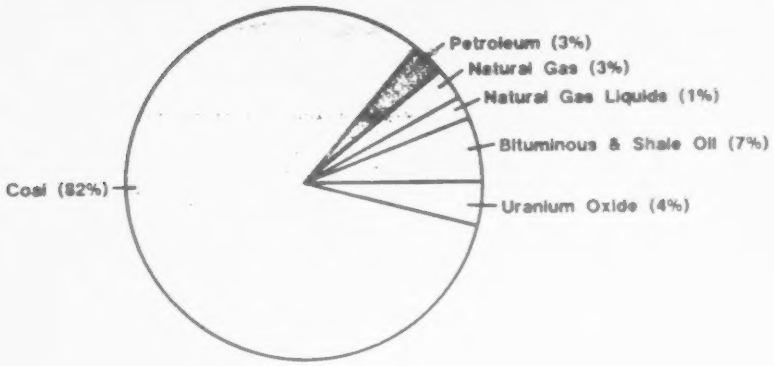
Progress in FY 1990 and Prior Years:

Research focused on improving mining technology for minerals and coal vital to the economic health and the defense of the Nation. The Bureau believes that the mining industry needs new technology to overcome the handicaps facing it. These handicaps include low-grade ore, higher wage rates than foreign competitors, and expensive measures to keep workers from becoming ill or injured in mines.

Research on developing innovative technology for metal mining focused on in situ leach mining. With in situ leaching, dilute chemical solutions dissolve the target metals underground; the solutions are pumped back to the surface for metal recovery. The method offers very safe working conditions for the miners for all operations are conducted from the surface. Based on past experience with in situ uranium mining, little environmental disruption occurs, and companies can readily reclaim leaching sites. The Bureau estimates that the method can cut metal production costs by one-third. Bureau studies on the relationship between the geologic characteristics of a deposit, its hydrology, and its potential for leaching improved the understanding of leaching processes. Researchers tested models describing leach solution movement through fractured rock. New methods of detecting leaching solution position in an ore body allow engineers to design better solution distribution systems. Research included preliminary steps to set up a copper leaching field experiment at a site near Casa Grande, Arizona. In situ leach mining research in FY 1990 began to address particular problems involved in recovering critical metals.

In situ leach mining is not applicable to all ore bodies. The Bureau also worked on innovative mining technology for such deposits. To reduce reliance on inefficient and hazardous blasting operations, the Bureau studied methods of mechanically cutting hard rock. The resulting new concepts attracted industry attention; several cooperative research projects with the private sector arose from these studies. Other studies showed that microwave energy may help "soften" hard rock for mechanical cutting. The Bureau

U.S. ENERGY RESERVES



ELECTRICITY GENERATION

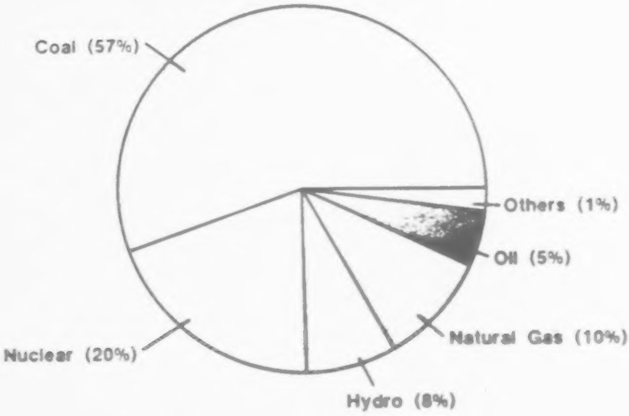


Figure 6.--Coal makes up approximately 82 percent of the energy reserves of the United States yet only 57 percent of the electricity is generated from coal. If the U.S. is to have a secure domestic energy supply for future generations, coal is likely to become more of a factor. To help offset costly environmental controls, coal must be mined efficiently to keep it competitive with other forms of energy.

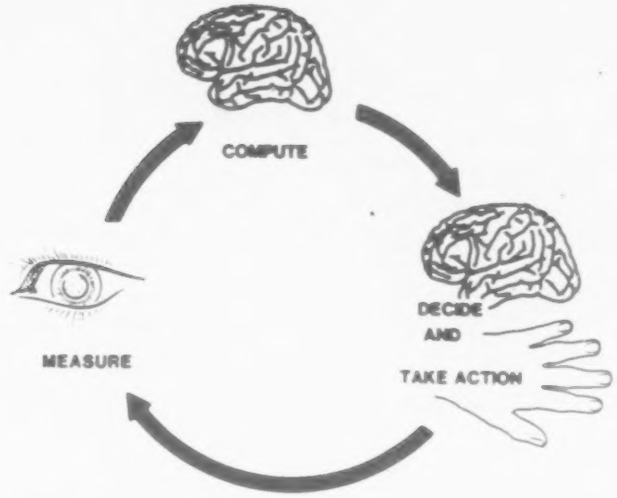


Figure 7.--Humans use sensors such as their eyes to detect an abnormal mining situation, their brain to identify that they have detected a problem, and then decide what action is needed.

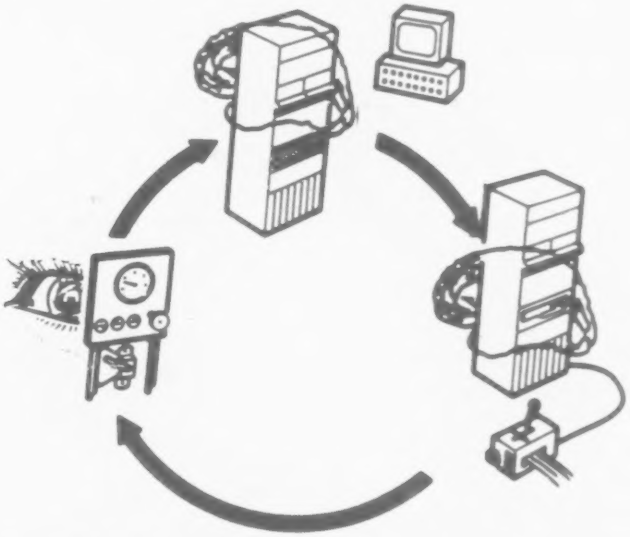


Figure 8.--Computers will enable humans to mine in a more efficient way without being exposed to danger. The computer and its sensors detect problems early so that downtime can be minimized and workers moved to protected areas. The worker will continue to operate the machine, but with additional information from the computer. As the Bureau's research progresses, the computer will control more parts of the machine with the human overseeing it.

also identified new ways of cutting and drilling rock with water jets. In FY 1989, borehole slurry mining experiments began to emphasize technology for mining small deposits of critical metals.

The Bureau directed some research toward developing technology to help improve conventional mining. These investigations included design techniques for an underhand longwall method (tested in the Lucky Friday Mine in Idaho) and the vertical-crater-retreat method (tested at the Homestake Mine in South Dakota). These two methods enable companies to increase mine productivity while reducing miner exposure to hazardous underground conditions.

The Bureau has aggressively pursued research on using computer-assisted technologies in mining. Progress has been made in the areas of sensors for machine control; computer control of a mining system; diagnostics systems for a continuous miner; and detection of the coal-roof rock interface. Laboratory models for sensor systems used to support machine guidance, control of motion such as cutting, and other maneuvers have been constructed and tested. Several methods of detecting coal interface were tested and progress was made in determining their limitations and applicability to the variable conditions encountered during mining. An interface and priorities prototype for the many computers needed to guide and cut coal on a continuous miner was delivered by the National Institute of Standards and Technology. Carnegie-Mellon University delivered a locomotion emulator that can simulate the motion of various mining systems. The emulator will be used to test the guidance systems being developed. An expert system for trouble shooting electrical systems of a continuous miner was demonstrated successfully.

Progress was made in devising a low cost way to recover mountaintop coal -- a resource that is not fully utilized. Laboratory mockups of a conceptual mining system were used to test the proposed cutting technique.

Proposed Work in FY 1991:

The heavy emphasis on innovative mining techniques will continue. Each technology will be evaluated for use in mining domestic deposits of platinum-group metals, manganese, chromium, or other critical metals. Although it will take 10 or 15 years for new technology to significantly boost domestic critical metals production, the Bureau believes that the security and stability offered by domestic production justifies the time and expense involved.

In situ leach mining research will characterize critical metal deposits so operators can evaluate their leaching potential. Fluid flow control and detection research will continue. Research in containment technology will build upon basic studies begun in FY 1989. Researchers will expand models for predicting solution movement. Experiments on technology for leaching manganese will proceed. The Bureau emphasizes manganese in these studies because a manganese supply disruption would be relatively costly and laboratory tests indicate that manganese leaches readily from various manganese ores.

In FY 1991, the Bureau is expanding cooperative research on other new, safe methods for mining low-grade and/or small deposits of critical metals. Research targets include: (1) underground mining for deep placer deposits containing platinum; (2) borehole slurry mining of the same deposits with water jets; and (3) remote mining of selected high-grade deposits of manganese, chromium, and perhaps cobalt with water jets. Researchers will evaluate new mechanical cutting concepts. They also will continue developing a knowledge base for thermal rock fragmentation.

As the Nation exhausts mineral deposits in the lower 48 states, those in Alaska will become very important. Alaska hosts important deposits of platinum, chromium, manganese, and other critical metals. The Bureau will continue studies begun in FY 1990 on methods for mining in Alaska. The Alaskan environment creates difficult engineering problems. The concern for the fragile Alaskan ecosystem will also impose strict bounds on the mining activities allowed in the State. To overcome the problems, the Bureau will study mining methods that minimize environmental disruption. These include in situ leaching and borehole slurry mining as well as conventional underground mining.

The research on advancing conventional mining technology will continue. Investigations will emphasize designing underground openings that permit maximum extraction efficiency while safeguarding miners from hazardous rock conditions. The research relies heavily on cooperative studies with mining companies. Investigations will include studies on mining the highly fractured rock containing platinum and chromium in Montana. Research on technology for filling depleted mine openings with fine waste rock will also continue, particularly on a new technique of filling the openings with dewatered tailings. Filling the openings allows recovery of ore left in the pillars that support the mine openings. Beside improving resource recovery, the method helps solve a waste disposal problem. The Bureau will begin evaluating a new concept, conical block cave mining, which also promises efficiency improvements.

A prototype computer-assisted continuous miner will be field-tested in a research area at a cooperating coal mine in West Virginia. Various sensors, guidance techniques and control systems will be tested under mining conditions. Since the area to be used is not a working section of the mine, Bureau researchers can make changes and try different systems without delaying production. They hope to develop a reliable face guidance and control system that allows predictable results before they evaluate more advanced computer-assisted control techniques. Fundamental studies will continue on support systems (such as ventilation and "vision") that a computer-assisted miner needs to function. Research efforts will continue on developing computer software to direct mining machines to cut according to a plan.

Research will continue on safe, low cost, and environmentally acceptable ways to mine mountaintop coal. Concepts being investigated should allow greater recovery of these coal reserves at a significantly lower cost. A small effort will focus on using biotechnology to recover energy in the form of methane from coal more effectively.

Outyear Plans:

Research will continue to focus on innovative and efficient mining methods. A greater emphasis will be placed on mining technology specifically targeted for platinum, manganese, and chromium. For example, as research in in situ leaching of copper matures, the Bureau has begun evaluating the method for manganese. By FY 1992, researchers will be experimenting with the method for deposits of manganese in Minnesota, Arizona, and/or Nevada. This research could allow companies to produce 100,000 tons of manganese per year within 10 to 15 years. Research on other mining methods, such as borehole mining, will focus on small critical metals deposits by FY 1992. Such research could lead to a doubling of platinum production within five years and further growth in manganese production. The work may target chromite deposits in Appalachia, manganese deposits in Minnesota, and cobalt deposits in Idaho.

In automated coal mining technology, research on coal interface detection, system guidance and control, ventilation, and system diagnostics will start to come together. The continuous miner will be able to cut a 40-foot advance or deep cut while under computer control by FY 1993. Subsequent efforts will focus on bringing the roof bolter into the system and having the continuous miner make crosscuts under computer control.

DECREASE FOR FY 1991: (Dollar Amounts in Thousands)

		FY 1991 Base	FY 1991 Estimate	Change
Advanced Mining Systems	$	20,049	13,049	-7,000
	(FTE-T)	(212)	(198)	(-14)

Funding is not requested to support a field-scale experiment for the in situ leaching of copper at Casa Grande, Arizona. This technology has grown to the point where further development is more properly conducted by the private sector. Funds requested for selective mining research for critical minerals and for automated control of a highwall miner are being reduced.

* * * * * *

SUBACTIVITY DECREASES FOR FY 1991

		(Dollar Amounts in Thousands)		
		FY 1991 Base	FY 1991 Estimate	Decreases
Health, Safety and Mining Technology				
Occupational Health	$	8,440	3,840	-4,600
	(FTE-T)	(84)	(65)	(-19)
Ground Control	$	8,885	7,135	-1,750
	(FTE-T)	(126)	(111)	(-15)
Human Factors	$	3,154	2,696	-458
	(FTE-T)	(45)	(41)	(-4)
Mine Safety Systems	$	5,041	4,441	-600
	(FTE-T)	(72)	(67)	(-5)
Mine Disaster Prevention	$	7,207	4,657	-2,550
	(FTE-T)	(102)	(79)	(-23)
Experimental Facilities	$	2,337	2,337	—
	(FTE-T)	(33)	(33)	(—)
Advanced Mining Systems	$	20,049	13,049	-7,000
	(FTE-T)	(212)	(198)	(-14)

* * * * * *

OBJECT CLASSIFICATION DISTRIBUTION

The object class detail for the $16,958,000 decrease for the Health, Safety and Mining Technology subactivity is as follows:

	FTE-T	Amount
Personnel Compensation	(-80)	$ -1,874,000
Personnel Benefits		-293,000
Other services		-12,291,000
Grants		- 2,500,000
Total		$ -16,958,000

Justification of Program and Performance

SUBACTIVITY OVERVIEW

ACTIVITY: RESEARCH
SUBACTIVITY: MINERALS AND MATERIALS SCIENCE

(Dollar Amounts in Thousands)

		1990 Enacted To Date	1990 Adjusted Approp	1991 Base	1991 Estimate	Inc. (+) Dec. (-) From Base
Minerals Research 1/	$	17,141	16,914	17,171	15,821	-1,350
	(FTE-T)	(283)	(283)	(282)	(274)	(-8)
Materials Research 2/	$	9,299	9,176	9,314	8,664	-650
	(FTE-T)	(113)	(113)	(112)	(110)	(-2)
Total Requirements	$	26,440	26,090	26,485	24,485	-2,000
	(FTE-T)	(396)	(396)	(394)	(384)	(10)

1/ Old element titles, "Vulnerable Strategic and Critical Metals" and "Minerals and Metals Essential to the Nation" now combined new single element into "Minerals Research"

2/ New element title for FY 1991, "Materials Research"--former title was "Materials"

IMPACT OF PUBLIC LAW 99-177:

	1990 Enacted To Date	PL 99-177 B.A.Cancellation	1990 Adjusted Approp.
Minerals and Materials Science	26,440	-350	26,090

As a result of the $350,000 reduction, research in all program areas will be stretched out, resulting in delays in obtaining research results. The reductions will primarily affect in-house research, thereby resulting in some delays in acquiring scientific equipment, supplies, and materials. Where possible, anticipated program efforts will be delayed rather than cancelled.

* * * * * *

MINERALS AND MATERIALS SCIENCE

The Minerals and Materials Science subactivity provides the science base needed to develop competitive mineral processing technologies and to reduce the Nation's dependence on foreign sources of minerals and materials important to its defense and economic well-being. The subactivity conducts basic research on technologies that will stimulate new uses for domestically produced materials and the development of domestic substitutes for materials that require significant quantities of imported strategic and critical minerals. In addition, the program provides the basic knowledge that the domestic mineral industry needs to establish mineral recovery technologies that are both environmentally and economically sound.

Program objectives are achieved through three major thrusts:
- o promote the conservation of the mineral and materials resources of the United States.
- o help keep the United States a leader in the area of minerals and materials science.
- o contribute to the science base in order to stimulate the U.S. minerals and materials industry.

These program thrusts offer many benefits to the Nation including:
- o providing basic research that will help improve the Nation's environment.
- o providing technologies for the effective recycling of minerals contained in scrap and waste.
- o increasing the recovery of by-products and co-products minerals from ores mined for other primary commodities.
- o stimulating U.S. industries by providing needed minerals and materials technologies.

To manage this subactivity effectively, the research is conducted under two program elements and five subelements:
- o Minerals Research (a combination of two former elements, Vulnerable Strategic and Critical Metals, and Minerals and Metals Essential to the Nation)
  - – Recovery from Primary Sources
  - – Recovery from Scrap and Wastes
  - – Advanced Extraction Technologies
- o Materials Research (the former Materials element)
  - – Conservation
  - – Substitution

Minerals Research will emphasize increasing the use of domestic resources. Research will focus on environmentally sound technologies that economically recover needed minerals from low-grade and nontraditional domestic sources; that recover by-product or co-product minerals from domestic ores currently processed only for their primary metallio values; and that recover mineral and metallic values from secondary resources (i.e., scrap and wastes). This research should help reduce the Nation's dependency on foreign sources of minerals and materials.

Materials Research will emphasize technology that supports reducing the major losses of materials due to wear, corrosion, and other factors (conservation), and new materials to replace those that now require large amounts of strategic and critical minerals (substitution).

* * * * * *

AUTHORIZATION: 30: U.S.C. 1-11

OBJECTIVES:

Provide improved and innovative technologies that will:

- o contribute to the continued leadership of the United States in minerals and materials science;
- o provide adequate domestic supplies of strategic and critical minerals as well as other minerals required for the manufacture of advanced materials;
- o enable the production of advanced materials that will perform better in hostile environments and/or offer significantly improved mechanical and/or physical properties; and
- o encourage the conservation of minerals and materials through increased recycling, materials substitution, improved recovery of by-product minerals, and increased service life of materials.

RELATED BUREAU OF MINES ACTIVITIES: The Mineral Institutes Generic Technology Centers for pyrometallurgy, comminution, and mineral waste management and recycling conduct research that complements the Minerals and Materials Science subactivity. The Bureau's staff guides the Generic Center research to ensure that it is relevant to the Bureau's program. In addition, research on the strategic and critical minerals and materials that is conducted under contract at the Idaho National Engineering Laboratory (INEL) complements and enhances the Bureau's in-house research program.

* * * * * *

MINERALS RESEARCH

OVERVIEW: Abundant, easy-to-recover mineral reserves formed the original foundation for the wealth and strength of the U.S. economy. Today, many of these reserves have been depleted or the ore grade has declined significantly (e.g., copper). New technology must be developed so that the U.S. mineral industry can utilize lower grade unconventional domestic resources to supply the raw materials required to meet the Nation's industrial and military needs, and so that the Nation can conserve its decreasing mineral resource base.

The Bureau's Minerals Research seeks to expand that resource base by developing technology that allows the Nation to use previously untapped mineral resources and recycle valuable metals that are now lost. Research is conducted under three subelements:
- o Recovery from Primary Sources
- o Recovery from Scrap and Wastes
- o Advanced Extraction Technology

Recovery from Primary Sources includes recovering both the major constituents in an ore as well as by-products. Sources include minerals, concentrates, and discarded minerals, such as tailings, that have not been chemically modified. Bureau scientists are investigating the applicability of a wide range of metallurgical techniques to the extraction problems posed by these resources.

Recovery from Scrap and Wastes includes recycling and deals with scrap materials that would otherwise be discarded and with the recovery of valuable minerals from chemically modified wastes such as slags, fumes, and leach residues. We are working with technology similar to that for the subelement on primary sources. Although the materials to be processed typically contain higher concentrations of valuable minerals, they are often far more complex.

Advanced Extraction Technology focuses on conducting basic research and developing generic technology. Although generic technology gives mineral companies a basis for developing processing procedures for specific ores, the companies have little incentive to conduct such research since results may not immediately benefit their operation. Research under this subelement includes work on biotechnology, automation and control, and improved purification techniques.

Fifteen to twenty years may lapse between the time scientists start investigating a problem and the opening of a plant that uses the technology produced by that investigation. The Bureau thus conducts its Minerals Research with an eye on the future mineral needs of the Nation. Meeting those future needs makes this research necessary today.

PROBLEM: The United States lacks adequate domestic sources for key minerals required in today's high-technology applications. The Nation must therefore rely on foreign producers for many of its mineral and material requirements. This dependence makes the Nation vulnerable to supply disruptions and contributes to its trade deficit. U.S. reliance on South Africa and the Soviet Union for certain vital strategic and critical minerals is particularly troubling given the unstable nature of our present relations with those countries.

The United States actually exports some ores because the Nation lacks the necessary processing capability. For example, we ship platinum-palladium concentrate from the Stillwater Mining Company's Montana operations to Belgium for refining and copper concentrates to Japan for smelting. Although these minerals are mined in the United States, the Nation's inability to process them makes them just as vulnerable to a supply disruption as if they were mined overseas and then imported.

The U.S. mineral industry also faces problems that threaten the continued production of minerals for which the Nation has adequate resources. The goals of conserving wetlands, wilderness, and recreational areas now compete with mineral producers for land that could be used for mineral recovery. Nationwide concern for the environment also places additional restrictions on mining and mineral processing. Much of the Nation's present mineral production capacity was developed at a time when land was more easily accessible, pollution control requirements were less strict, and the ores being mined were richer or easier to process.

The Bureau seeks to provide the mineral recovery technology base that will allow multiple land use and safeguard the environment while producing the minerals required by the Nation and reducing its dependence on foreign resources and processing capabilities. The Bureau will continue to conduct long-term, high-risk research that looks to the Nation's mineral and material requirements for the start of the 21st century. This work involves developing economic and environmentally sound technology to take advantage of unconventional domestic resources (such as low-grade or hard-to-process ores, scrap, and waste). It also includes identifying and developing the technology needed to use them.

Federally owned land, much of which is being withdrawn from private exploration and development, holds the greatest potential for supplying many of those minerals. Only the development of new technology--technology that recovers minerals economically and without damage to the environment--will allow the Nation to make full use of its resources.

Work under the Recovery from Primary Sources and Recovery from Scrap and Waste subelements will develop technology for producing specific mineral products from domestic ores, scrap, and waste. The mineral products chosen for research will be of either strategic or economic importance to the Nation. The Advanced Extraction Technology subelement will investigate generic technologies applicable to a range of minerals. Although this work will contribute to commodity specific research, its goal is to provide a technology base that will help assure that the Nation can meet its future mineral requirements.

PROGRAM

Recovery from Primary Sources: This subelement focuses on technology that will increase mineral production from domestic sources. A major thrust is to provide technology that can reduce the Nation's dependency on South Africa and the Soviet Union for strategic and critical minerals.

A second thrust is to prevent further deterioration of the U.S. mineral reserve base. Such deterioration would threaten national security and weaken the economy. The Bureau is analyzing the National mineral requirements and reserves to predict those minerals for which the reserve base will be inadequate in 10 to 20 years. Technology will then be investigated for domestic sources of those minerals that today either cannot be mined and processed economically today or that cannot be mined and processed at all.

Bureau research is always directed at developing environmentally sound, safe, and less energy-intensive processes. The Bureau seeks constantly to improve the technology base upon which the U.S. mineral industry operates so that anticipated or potential regulatory actions will not disrupt mineral production.

Progress in FY 1990 and Prior Years:

The Bureau developed new leaching systems for copper, lead, and zinc that are technically feasible, economically viable, and environmentally sound. These systems could replace conventional smelting processes, allowing metal recovery without sulfur dioxide or lead emissions to the atmosphere or in the work place. The Bureau's assessment of the effect of pending safety and environmental regulations on the lead industry indicated that this technology may provide the least expensive way to meet all proposed regulations, including those that limit worker exposure to lead.

Researchers identified a means of concentrating chromium (i.e., producing enriched material containing chromium by separating it from some of the waste material present in the original ore) from the Red Mountain deposit owned by Cook Inlet Region, Inc., a native Alaskan corporation. A small sample of concentrate was supplied to the corporation for additional tests to determine if the ore is suitable for producing ferrochromium--an important ingredient in stainless steel. Samples from other Alaskan deposits containing chromium, niobium, platinum-group metals, rare-earth metals, tantalum, tin, and tungsten were characterized to determine their chemical and mineralogical composition. In addition, various mineral recovery technologies were investigated to help determine the economic potential of these deposits.

A method was developed for recovering platinum-group metals, chromium, and gold from the Eagle Mine in Oregon. This technology should also be applicable to similar offshore deposits recently found on the continental shelf within the U.S. Exclusive Economic Zone. In related work, scientists showed that seawater can be used to beneficiate ocean crusts--a discovery which should facilitate onboard processing of this material. The Bureau's low-temperature, low-pressure process for recovering cobalt, nickel, and manganese from ocean crusts proved highly efficient. A patent application for this process was accepted.

In FY 1990, a cooperative effort to apply the Bureau's solvent extraction technology for recovering gallium and germanium from a deposit in Utah was completed. Technology for recovering gallium and germanium from zinc processing wastes was also developed. These metals have optical and electronic applications that are important to both defense and industry.

Laboratory studies on an unique acid-alcohol leaching technique of high- alumina phosphate ores showed that an acceptable phosphate product can be produced. Conventional leaching techniques cannot be used on this material. The low-alumina ores on which the phosphate industry now depends are rapidly being depleted. The Bureau's new leaching technology may allow phosphate producers to process high-alumina ores instead. Research in FY 1990 showed that this technology can also recover phosphate from tailings left over from past phosphate production. These tailings represent a promising source of phosphate for they contain not only the same percentage of phosphate as the original ore, but also one-third of the phosphate that was present in the ore. The Bureau's work may thus give the Nation two new sources of phosphate- a vital ingredient in agricultural fertilizers.

Proposed Work in FY 1991:

Studies of the basic reactions involved in the in situ leaching of copper ore will be completed. Some of these studies support the Bureau's ongoing in situ leach demonstration project in Arizona.

In other basic studies, research on applying recently developed biological waste treatment technology to mineral recovery will continue. Mineral sources under investigation as potential candidates for this technology include low-grade manganese ore, refractory gold ore, and platinum-group metal ore and tailings.

The Bureau will continue to obtain samples of, characterize, and assess the recovery potential for domestic mineral deposits, especially those that contain strategic and critical minerals or that occur where land use decisions are pending. The primary focus of this effort will be Alaskan deposits. Alaska not only has the Nation's highest potential for new mineral deposits, but over 60 percent of this land is under Federal control. Much of this land, however, is withdrawn as wilderness or park land or restricted from private exploration. The government needs accurate assessments of the mineral potential of these lands in order to make wise decisions governing their use. Analysis of samples from several abandoned mines in Arkansas showed significant concentrations of cobalt, manganese, ~~and gold.~~ This combination of metals is a unique potential mineral resource. The Bureau will help the State of Arkansas assess this potential resource by investigating technology for recovering all three minerals as co-products. Development of such technology could give the Nation its only domestic source of manganese. A similar effort to develop technology to recover tantalum and columbium from domestic resources will be completed in FY 1991.

Efforts will continue to develop new sources for those minerals for which the reserve base is predicted to be inadequate in 10 to 20 years. This work includes a cooperative effort with the Tennessee Valley

Authority to determine if the application of the Bureau's acid-alcohol leaching process to local phosphate ores or tailings producing a phosphoric acid that can be used to manufacture fertilizer. Additional studies include the recovery of gold from refractory ore and the recovery of rare-earth elements associated with Missouri iron ores and the tailings from past iron ore processing.

Research on methods to recover minerals from offshore deposits in the U.S. Exclusive Economic Zone will study mineral recovery processes emphasizing heavy mineral deposits which are potential sources of chromium, platinum, rutile, and zircon.

Recovery from Scrap and Waste: Research under this subelement seeks to develop technology for recovering metal and nonmetallic mineral values from scrap or waste, thereby reducing the need to import or mine such minerals domestically. This research should help the Nation conserve minerals, protect the environment, and save energy.

Scrap generated during manufacturing processes (prompt scrap) and scrap from worn-out, obsolete, or otherwise discarded machinery and equipment (obsolete scrap) are valuable sources of metals, especially of imported strategic and critical metals. At present, the United States exports many kinds of scrap and waste materials for metal recovery abroad, because processing facilities do not exist in this country. The lack of existing primary metal production facilities for such minerals as cobalt often limits metal recovery from scrap or waste. A lack of adequate recovery technology means that obsolete scrap is often downgraded to a lower use--one that does not take full advantage of the strategic and critical metals contained in the material.

The mining and mineral processing industry generates large volumes of waste material. Since past mineral recovery operations often sought only the high-grade principal metals in ores, much of the over 5 billion tons of mineral waste in this country has potential for secondary mineral recovery. Some of the unrecovered minerals are in fact essential to high-technology applications that did not exist when the original ore was processed.

Since some mineral wastes contain metals and minerals that pose potential environmental hazards, processing them to recover mineral values has a secondary benefit of minimizing environmental problems. Recovering minerals from waste and scrap also requires significantly less energy than extracting those minerals from ores.

Progress in FY 1990 and Prior Years:

In FY 1990, laboratory work on a method for recovering platinum, palladium, and rhodium from spent automobile catalytic converters was completed. Most of these converters are now shipped abroad for recovery of the platinum-group metals in them. If the Bureau's technology is adopted by industry, it would allow regional collectors to process the scrap converters and avoid the current practice of exporting them for metals recovery.

The Bureau developed methods for recovering cobalt and nickel from mixed and contaminated superalloy scrap. This effort resulted in the development of two alternative technologies that can treat all forms of superalloy scrap. The first produces a mixed cobalt-nickel alloy suitable for many superalloy uses. The second uses a novel dual-membrane electrodissolution-electrowinning cell to produce pure cobalt and nickel metal.

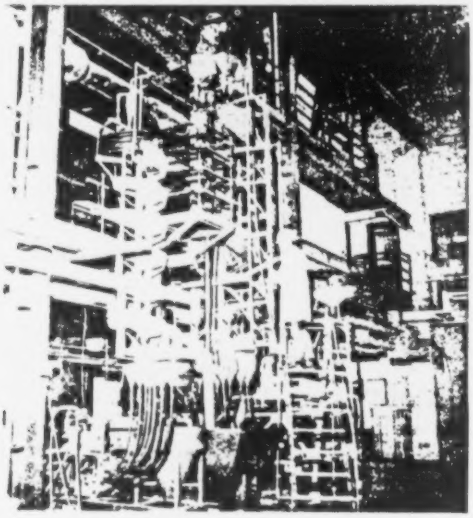
The United States imports flake graphite, a mineral product used in many furnace refractories, due to a lack of suitable domestic resources. Bureau research has shown that flake graphite can be concentrated and recovered from kish, an abundant waste product from iron production. Test refractories made from this material were equal or superior to those made from imported flake graphite.

The strategic and critical materials recycling survey, performed in cooperation with the Bureau's Division of Mineral Commodities, was completed, and models have been prepared representing the flow of cobalt, platinum-group metals, chromium, and manganese in the scrap cycle. Additional research needs were assessed.

THE UNITED STATES MUST KNOW WHAT STRATEGIC AND CRITICAL MINERALS ARE AVAILABLE ON FEDERAL LANDS...

Highly trained mineralogists using advanced analytical equipment determine the strategic metal content of ore samples such as shown in the photomicrograph (below). The light areas are the metal-bearing minerals.

...AND WHAT IT WILL TAKE TO GET THEM OUT IN AN ENVIRONMENTALLY SAFE WAY.

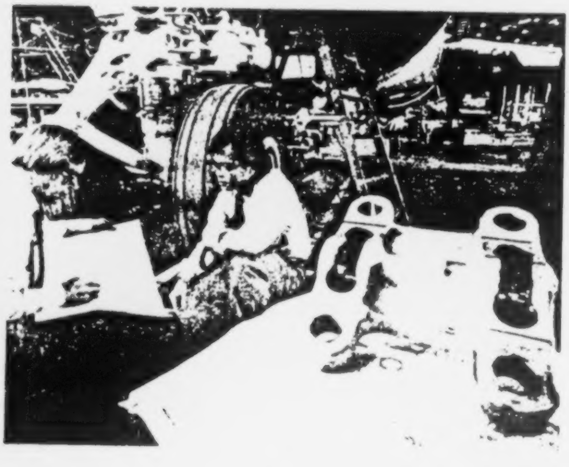


Recovery and economic data obtained in this pilot-scale mineral processing plant helps ensure prudent land use decisions

MINERAL WASTE...OR AN ORE DEPOSIT?

This waste pile is a potential source of scandium, an alloying element that gives aluminum unique mechanical properties. Bureau scientists are working to find separation technology that will enable recovery.

MINERAL WASTES, STOCKPILED FROM PREVIOUS MINING ACTIVITIES ARE OFTEN CONSIDERED ENVIRONMENTAL PROBLEMS.



Scandium makes aluminum superplastic (able to stretch when formed) when about 1 percent is added to the aluminum.

THE POTENTIAL INCREASE IN DEMAND FOR SCANDIUM FROM A DOMESTIC SOURCE MEANS REVENUE AND JOBS FOR AMERICA.

Proposed Work in FY 1991:

Waste containing significant quantities of vanadium are being classified as hazardous. However, with improved mineral recovery technologies, this "hazardous" waste could become a new source of vanadium--an alloying agent for iron and steel. Titanium chlorination waste is one such waste that has been targeted by the Bureau for study. Researchers estimate that a successful recovery technology could meet about 15 percent of the Nation's demand for vanadium (an estimate based on 1987 consumption). Recovery technology would also eliminate the environmental threat posed by the waste, reduce its volume, and allow the recovery of additional minerals such as unchlorinated rutile (a source of titanium).

A new project will investigate the effect of some new engineered materials on recycling scrap. Composites containing graphite fibers, silicon carbide, aluminum oxide, and other new materials will cause problems if mixed in with conventional alloys during recycling. Drawing on past experience in devising methods for identifying alloys using X-rays and other techniques, the Bureau will develop procedures for identifying these new materials so they can be segregated in the recycling process. Users will pay more for segregated scrap. As a major seller of advanced materials scrap (scrap obtained from military equipment), the Government should benefit from the higher prices, thereby helping to reduce the Federal deficit.

The electrodissolution-solvent extraction-electrodeposition method developed for treating superalloy scrap will be adapted to scrap containing other strategic and critical metals. This technology may be able to remove trace impurities in metals and allow the use of scrap in critical components. Buildup of impurities prevented such use in the past.

Work on developing a process for recovering scandium contained in tantalum- processing waste will continue. New sources of this metal will be required if recently developed fatigue-resistant aluminum alloys are accepted for use in the construction of airplanes.

Advanced Extraction Technology: Under this subelement, the Bureau conducts basic research to understand better the behavior of metallurgical reactions and investigates generic technologies that will lead to innovative mineral production methods that address the Nation's long-term mineral supply problems as it moves into the 21st century. New technologies will be needed to recover minerals from lower grade and more difficult-to-process ores, to reduce pollution resulting from mineral production, and to enable the domestic mineral industry to meet the Nation's mineral requirements in the "high-tech" world of the future. The objective of this research is to make major improvements in the technology base and to investigate totally new approaches to minerals recovery and metal extraction. Emphasis of the research is on understanding the underlying technical principles that affect mineral recovery processes. The results of this basic research are likely to lead to new generic technologies with a wide range of applications.

Progress in FY 1990 and Prior Years:

Solvent extraction is a valuable technique for recovering, separating, and purifying metals or compounds in solutions. The usefulness of the technique depends on the binding of the extractant to specific metals or compounds. Bureau research increased the understanding of the fundamental chemistry of these extractants and scientists have used this knowledge to design and synthesize improved extractants. Bureau research on liquid emulsion membranes--a variation on solvent extraction that greatly increases the rate at which solvent extraction processes can proceed-- identified ways to reduce obstacles that have prevented widespread use of this technology.

The random fluctuations of many mineral production processes has proved a major obstacle to efforts to control and automate them. Scientists believe that modern measurement and computer technology can be used to measure very small increments in what appear to be discontinuous events and to predict short-term behavior. These short-term predictive models could then be used in making decisions to improve the control of seemingly random processes.

Researchers tested this hypothesis in a study using electric arcs such as those found in electric arc furnace steelmaking. The use of alternating current and the melting away of materials exposed to the arcs make them unstable and the melting process virtually impossible to control. The Bureau's research provided a new fundamental understanding of arc behavior and laid the groundwork for a whole new concept of process control. Scientists used their new knowledge about electric arc behavior and recent developments in computer technology to design new control strategies for electric arc furnaces. These strategies will improve steelmaking productivity while reducing noise, wear on equipment, and electric power disturbances. The advancements in modeling theory and control strategies that resulted from the Bureau's work will have widespread impact on the development of control procedures for other mineral processing operations.

Other research sought improvements in the control of flotation–the operation most widely used to separate minerals from the undesirable materials contained in an ore. In basic research, the electrochemical characteristics of the minerals surfaces exposed to flotation reagents were measured. In another project, scientists designed instruments to measure oxidizing conditions present in operating flotation cells. This information can be used to control the addition of chemical reagents during flotation.

Scientists applied artificial intelligence techniques to the control of mineral processing operations in general. The application of advanced computer technology to process control problems may play a major role in improving the efficiency of the mineral industry.

The Bureau conducted studies to improve the basic understanding of leaching processes. Leaching can sometimes leave much of the valuable component in the ore. Researchers discovered that in some cases, the leach reactions are stopped by the formation of a non-reactive film on the mineral particles. If the film is broken by chemical or mechanical attack, leaching will continue thus providing improved recovery of metal values. Other research has investigated the role of microorganisms in mineral leaching systems. Microorganisms promote leaching by using elements in minerals as food or by producing acids or other reagents as waste products.

Basic mineral properties, such as their response to microwaves or to very high intensity magnetic fields, have been measured. Differences in the responses of minerals to such conditions may be the key to developing future mineral processing technologies.

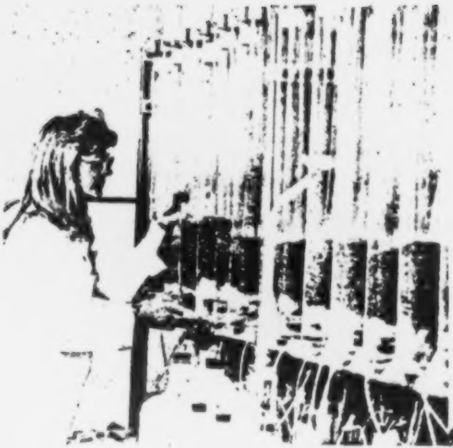
Proposed Work in FY 1991:

Research on the application of biotechnology to metal extraction will continue. Biotechnology is playing an ever increasing role in mineral processing, and it is essential that the Bureau's biotechnology program be closely coupled with its other research efforts on mineral recovery. These efforts undertaken jointly between the Bureau and Idaho National Engineering Laboratory have generated a number of successes in the area of extracting minerals in low grade concentrations such as tailings piles.

The Bureau's biotechnology research will include identification of appropriate microorganisms, operating condition (e.g., temperatures, pressures, and nutrient requirements), and development of appropriate equipment. In addition, work will begin aimed at developing new microbes designed specifically to enhance metal extraction processes. A basic research component of this expanded effort will focus on exploring the mechanisms by which microorganisms function in those processes.

The Bureau will continue to investigate improvements in solvent extraction–a technique used to concentrate or purify metals by selectively transferring them between aqueous and organic solvents. A new electrochemical technique to enhance the performance of solvents will be tested. The technique could be extremely useful in removing contaminants that interfere with commercial solvent extraction operations, and could make solvent extraction practical in new mineral processing situations.

Basic research will be conducted to evaluate a new system for high-pressure mineral extraction operations (such as pressure oxidation of sulfide ores before leaching). The system could reduce costs while improving operational safety.

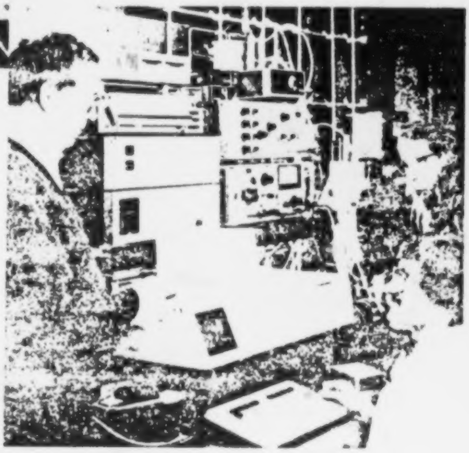


UNDERSTANDING...

...biochemistry
...electrochemistry
...surface chemistry

Biochemical reactions leach metal from rocks, extract toxic metals from solution, and corrode metal structures. Biochemical leaching studies (left) will provide data to help understand reaction mechanisms for cobalt extraction.

Electrochemical reactions govern froth flotation, leaching, and corrosion. Results from this flotation electrochemistry research (right) point the way to saving a typical copper producer $1,000,000 per year

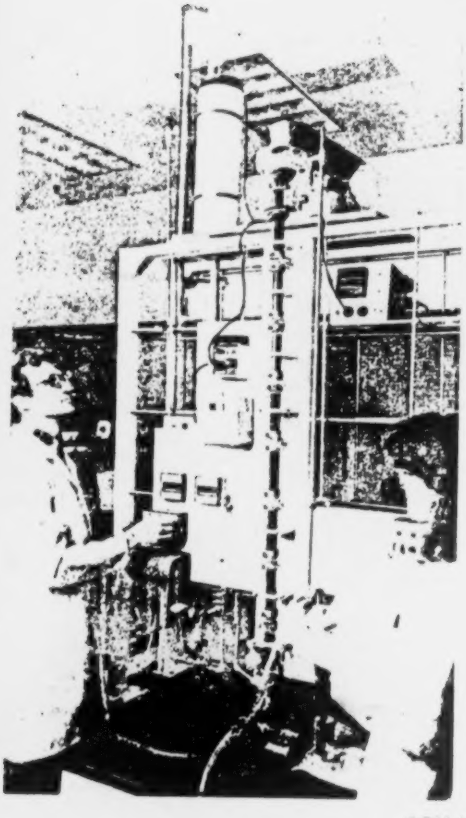


With this ESCA spectrometer (left) and other surface analytical instrumentation Bureau surface chemists produce key data to help understand the mechanisms of leaching, corrosion, and flotation.

...to lay foundations for extraction technology in the next decade

SOLVENT EXTRACTION - ELECTROWINNING MADE U. S. COPPER COMPETITIVE.

Solvent extraction is used to separate and purify metals dissolved in solution. The solvent extracts the metal from the solution, which is then stripped of the metal by a separate stripping solution in a two-step operation.



Bureau scientists learned how to make the solvent into an emulsion which encapsulates the stripping solution. Metal passes from the original solution through the solvent emulsion directly into the stripping solution in one step, greatly increasing the rate of metal recovery.

Bureau solvent extraction research will help keep it that way.

BOM-122

Comminution--the crushing or grinding of mined ores--is one of the most costly and energy-intensive steps in mineral processing. The Bureau will study new grinding methods that could be used in processing lower grade ores.

Research will continue to improve major mineral processing technologies such as flotation. Basic research on electrochemical control of sulfide ore flotation will be completed. The Bureau will continue to combine its unique knowledge of electrochemical control and column flotation to automate the control of a column flotation system.

A major effort will be made to provide a foundation for advances in the automation and control of mineral processing. The latest advances in sensors, artificial intelligence, and other computer software techniques, and in new types of computer hardware, will be examined and adapted to the requirements of the mineral industry. This research will be coordinated with robotics research conducted under the Health, Safety and Mining Technology subactivity. Specific subjects for control include flotation and arc stability in electric steelmaking furnaces.

Outyear Plans:

Research on recovering minerals from primary sources will focus on adapting new mineral processing technology to domestic deposits. Emphasis will remain on those strategic and critical minerals for which we are overly dependent on imports or for which health, safety, or environmental issues affect the future viability of the domestic industry. Although efforts to assess the mineral potential of Alaska will continue, similar research in other areas of the country will be decreased.

The Bureau's work on recovering minerals from scrap and waste will focus on the effect that new alloys and advanced materials will have on recycling. An increased effort will be applied to the removing impurities from recycled metals so that they can be used to manufacture new products. In addition, research will focus on the recovery of minor commodities (such as vanadium, gallium, scandium, lithium, and tantalum), which have important though low- volume uses, from the processing wastes generated by past or present mineral recovery operations. This research should yield a double benefit by reducing the potential environmental impact of mineral processing wastes while meeting the expected increased demand for these minerals. To accommodate these efforts, the Bureau will devote more of its Minerals Research funding to the Recovery from Scrap and Waste subelement. Research on Advanced Extraction Technology will continue to focus on basic research and the development of generic processes that could greatly improve the Nation's ability to extract minerals from domestic ores. Because of the extensive research required and the basic or generic nature of the work, industry has little incentive to support such efforts. Areas to be investigated include biological treatment technology, underground pressurized reactors, the development of novel and selective solvents, and ultrahigh field density magnetic separation. These emerging technologies may support the development of lower-cost metal recovery systems which will have less effect on the environment, especially when integrated with innovative mining techniques.

DECREASE FOR FY 1991:

(Dollar Amounts in Thousands)

		FY 1991 Base	FY 1991 Estimate	Change
Minerals Research	$	17,171	15,821	-1,350
	(FTE-T)	(282)	(274)	(-8)

Research in two areas will be concluded while research on a third subject area will be decreased slightly. Research on the Oregon Metals Initiative will be concluded after one year of effort; therefore, planned research on neutralization and pacification of wastes produced by metallurgical industries in Oregon, such as fluorine bearing steelmaking slags, will not be conducted. The investigation of metal-gas reactions in thermal plasmas is being curtailed early because of lack of technical progress and low expectation for successful conclusion. Low priority research on the use of inorganic membranes for use in minerals processing is being decreased.

* * * * * *

MATERIALS RESEARCH

OVERVIEW: The Federal government through the Bureau of Mines has an important role in ensuring that the Nation can meet its materials requirements. It must address such issues as conserving those domestic resources for which we are the supplier; minimizing domestic requirements or finding substitutes for those that must be imported; and expanding the market for those domestic resources that we have in abundance in order to stimulate entrepreneurship and employment. The Bureau's Materials Research program addresses these issues through generic high-risk research that is neither product-nor application-specific.

Materials Research supports conservation by providing the science base to make materials last longer, thereby enabling better quality products and reducing disposal and environmental problems. The program also provides the underpinning materials technology base to foster and encourage a strong raw materials industry through finding substitutes for materials not produced in the United States, particularly those that rely on strategic and critical metals for their essential properties.

PROBLEM: The rate at which the United States consumes materials is determined by five factors--wear, corrosion, breakage (fracture), new uses, and obsolescence. The first three are inherent to specific materials and occur at enormous cost to society. Recent studies estimate that wear, corrosion, and breakage cost the Nation hundreds of billions of dollars each year. In the industrial sector, the mineral and raw material industries (which must frequently replace large, expensive pieces of equipment) bear two-thirds of the costs from wear alone.

Wear, corrosion, and breakage waste tremendous amounts of materials, contributing to major waste disposal and environmental problems. For example, the machining of parts turns an estimated one-tenth of all metal produced into chips. Machining, a special case of abrasive wear which is influenced by such factors as alloy composition, consumes valuable resources that the Nation cannot afford to lose.

Present efforts to manufacture materials with greater wear and corrosion resistance achieve those qualities by using more and more strategic and critical metals. Gains made in improving the service life of materials are thus offset by the losses involved in an increased reliance on imported minerals, an undesirable situation.

PROGRAM: To address this multifaceted problem, the Materials Research program conducts research with two objectives:

- o Conservation of domestic mineral resources by reducing waste due to wear, corrosion, and fracture, through providing a science base that the private sector can use for developing new materials with longer service life.
- o Substitution of new materials made entirely from domestic resources for materials made from strategic and critical minerals.

The Materials program produces basic scientific knowledge of the physical and chemical phenomena involved in the synthesis, processing, fabrication, and performance of different classes of materials. That knowledge is obtained from long-term research that extends for periods of up to 10 years. The Bureau also conducts short-term (3 to 5 years) high-risk studies that address important national materials-related issues (e.g. acid rain) as they occur.

The Conservation subelement of the program addresses improving the performance of conventional materials; the Substitution subelement deals with the synthesis and processing of new materials.

Conservation (Extending the Life of Materials): Work focuses on predicting and reducing the degradation of conventional materials in each of the following areas:

- o Wear: Research determines how different classes of materials wear in different situations; how to tailor their microstructures to resist particular forms of wear; and when to use a ceramic rather than a metal or a polymer (plastic) to combat wear, and how to choose the best ceramic for the job.
- o Corrosion: Research identifies the chemical mechanisms of corrosion operating in different classes of materials. It clarifies how these mechanisms vary with composition, microstructure and atmosphere, and determines the best way to protect material surfaces against corrosion.
- o Fracture: Research focuses on brittle materials, such as ceramics, intermetallics, and composites containing a brittle phase. It determines how flaws originate in brittle materials, how they grow with time under load, and when they can be expected to split the material.
- o Synergistic Effects of Wear, Corrosion, and Fracture: Under real conditions, materials must resist both mechanical (wear and fracture) and chemical (corrosion) attack. It is thus necessary to understand how these mechanisms combine to cause degradation of different classes of materials. Such knowledge is particularly useful to industry in developing surface treatments for advanced materials that achieve both the chemical resistance and the mechanical strength required for extended service-life.

As the information generated by the Bureau's research is transferred to the private sector, it contributes to the development of new wear-, corrosion-, and fracture-resistant materials. These materials usually contain smaller amounts of strategic and critical metals, or none at all (e.g., intermetallics, ceramics, and polymers). The Bureau's work will help the private sector predict material performance in a particular application, make better use of materials in their present applications, and create new applications for such materials.

The development of new processing and coating methods to improve the service lifetime of conventional materials will allow the Nation to conserve its material resources and reduce its requirements for imported strategic and critical metals. Materials with extended service life will also help U.S. industry cut costs by reducing lost production and layoffs caused by machine breakdown as well as by decreasing the frequency with which it must replace equipment.

Progress in FY 1990 and Prior Years:

The Bureau developed a one-step process for applying ceramic and metal hardsurfacing materials to wear-prone surfaces during casting of the part. The ability to protect carbon steel with a coating, for example, means that the entire part need not be made from a high-chromium wear-resistant alloy. The Bureau collaborated with the U. S. Army to evaluate this technology for producing armor plate.

The wear resistances of selected intermetallics and ceramics made from domestically available minerals was determined. Data showed that these materials possess superior high-temperature chemical corrosion resistance and superior mechanical properties. Scientists used results from this work to explore the role of microstructure in determining how these materials respond to different forms of contact loading.

To reduce the huge losses caused by wear in the mining industry, the Bureau conducted wear tests at mining sites to identify wear mechanisms and recommended better materials for use at the Nation's mining industry. The Bureau provided on-site training to transfer this knowledge of wear problems and solutions to industry. The results of these tests provide a basis for continued research on wear.

Scientists determined atmospheric corrosion of seven different alloys in order to assess the effects of "acid rain." Conducted as part of the National Acid Precipitation Assessment program, this research will help policymakers reach decisions concerning air pollution regulation, maintenance, repair, and preservation of public property, and the U.S.-Canadian acid rain agreement. When the research is completed in FY 1991, quantitative relationships between atmosphere pollutants and damage to various metals under urban, rural, industrial, and coastal conditions will have been developed.

Studies of the effects of microstructure on corrosion rates showed complex relationships between composition, kinetics of passivating film formation, and chemical environment. The finding that oxygen must be present for stainless steel to remain "stainless" explains the rapid corrosion of stainless steel in sulphate hydrometallurgy--a process that consumes the available oxygen. A data base of the corrosion properties of materials widely used in mineral processing was assembled.

The Bureau developed computer models of fracture mechanisms in materials used in mining equipment to predict how the materials would fail. Model predictions were compared with experimentally determined failure data to validate the model. The ability to predict materials failure can reduce downtime and potential loss of life.

Electrogalvanized coatings on sheet steel that used zinc recovered from furnace dusts showed greater corrosion resistance than those made with pure zinc. Cooperative testing with a major auto maker demonstrated the improved properties.

Industry has applied basic science developed by the Bureau for making platinum and platinum alloy coatings using molten salt. At least one domestic company produces platinum-aluminide coatings with this method. Thin protective coatings made of platinum instead of solid platinum parts helps conserve this strategic metal.

A technique was developed to produce thick stainless steel coatings by trapping chromium particles in the iron-nickel coating during electroplating. The coating gives the abrasion and corrosion resistance of stainless steel to ordinary carbon steel parts. Since the whole part need no longer be made of stainless steel, this technology should reduce the consumption of chromium--a strategic metal used in the production of stainless steel alloys. Coating research also addressed new problems:

- o applying platinum alloy coatings to advanced ceramics and other non-conducting advanced materials. Ion implantation was needed to establish a conducting layer that would allow deposition of the platinum alloy coating.
- o determining the feasibility of trapping ceramic and polymer particles in electrodeposited coatings to improve wear resistance.
- o investigating the basic mechanisms of coating formation and materials transport during plasma spraying. A computer model of the temperature profiles in the plasma flame was developed and evaluated. It relates temperature profiles and particle cooling rates to spray parameters, providing information needed to ensure optimum coating integrity.

Proposed Work in FY 1991:

Basic research that underpins all corrosion and wear studies will continue. Scientists will identify wear mechanisms in selected polymers, intermetallics, and ceramics. This work will include the following studies:

- o Investigation of the influence of alloying and processing parameters on the abrasive wear of iron-aluminum intermetallics.
- o An experimental and analytical investigation of abrasion and erosion in selected classes of ceramics. This research will examine how the mechanisms of wear are affected by the relative scale of damage to the material's microstructure.
- o Collection of experimental erosion and abrasion data for representative samples of both thermoset and thermoplastic polymers to evaluate computer models of the wear process in these materials.

Additional research will address tailoring the microstructures of cast irons extensively used in structural applications in order to obtain optimum resistance to abrasion and/or repetitive impact. These cast irons contain up to 30 percent chromium and are widely used as wear-resistant materials. Increasing their service life would significantly reduce chromium consumption.

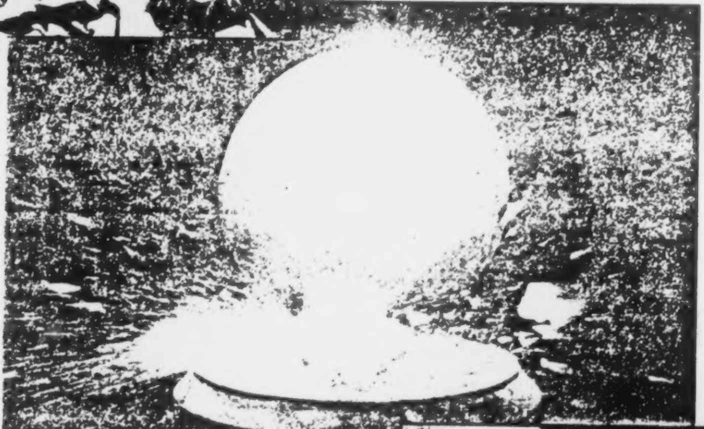
The acid rain research conducted in conjunction with the National Acid Precipitation Assessment program will be completed.

Basic electro and surface chemical research to understand the kinetics of passive film formation on cast and rapidly solidified iron-based alloys will continue. Results will be correlated with compositional and

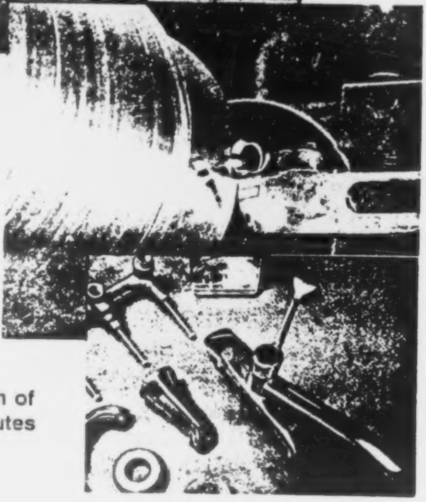
CONSERVATION...

...PREVENTING wear, breakage and corrosion...

White cast iron, containing up to 30 percent chromium is widely used in heavy equipment and grinding balls. It gets wear resistance from a carbide phase present in the iron matrix. Bureau scientists have shown that by altering the microstructure, to disperse the carbide phase as "islands" (left) instead of a continuous phase, wear and breakage resistance is increased with much less chromium.



Understanding wear and breakage contributes doubly to mining, where breakage must be minimized in the grinding balls, but maximized in the ore being ground.



...and PROMOTING them.

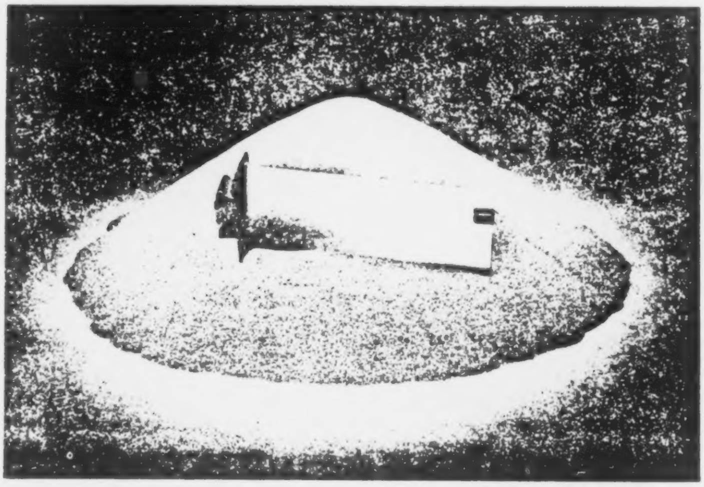
Machining is a special case of wear. About 10% of all metal produced is turned into chips. Bureau research into substitutes for lead in free-machining brass will help America's copper industry meet lead-free water quality standards for brass plumbing fittings.

The transfer to industry of the continuing evolution of understanding resulting from this research contributes to reduced requirements for strategic and critical materials through extended service life.

SUBSTITUTION...

...processing a material to make it better

Rapidly solidified alloys, which have an amorphous or glass-like microstructure, exhibit unique strength and corrosion resistance. Here, an iron-based alloy is being rapidly solidified into an amorphous metal ribbon for corrosion research.



Superior physical properties in steels made from rapidly solidified powder were shown to result from gases entrapped in the structure. This joint BOM-DOE(ECUT) research promises to make major impact on uses of iron-base stainless steels.

Research generates knowledge to assist the private sector in predicting materials performance, making better use of domestic materials in present applications, and helping to create new applications for such materials.

microstructural data to help develop predictive models to guide users in selecting materials and methods of surface protection.

New research will establish the proper criteria for brittle fracture under various loading conditions. Both theoretical and experimental studies in fracture mechanics, the statistics of fracture, and slow crack growth will be conducted.

Further studies will focus on obtaining a fundamental understanding of the particle trapping process that occurs during electroplating. This knowledge will be applied to efforts to form ceramic coatings by electrodeposition and to trap two or more different types of particles. Resultant coatings will be evaluated for resistance to the synergistic effects of corrosion and wear.

The Bureau will continue to study coatings that improve hardness and wear resistance, such as diamond films. Diamond film research focuses on the formation of the carbide transition substrate that serves as the interface between metal and diamond film.

Substitution (New Materials to Reduce Import Vulnerability): Substitution research focuses on reducing the Nation's dependency on imported raw materials through finding replacement material for those which rely heavily on strategic and critical metals to obtain essential properties. A typical example is to substitute domestically-producible intermetallic composites for cobalt-based superalloys in high-temperature applications.

Research conducted under this subelement addresses the technology base for synthesis and processing of new materials. It emphasizes substitutes that can be made from domestically available materials, including metals, ceramics and intermetallics, selected polymers, and composites.

Progress in FY 1990 and Prior Years:

Bureau research resulted in the development of stainless steels that use one-half the normal amount of chromium. Some were found to have superior mechanical strength at very low temperatures. A cooperative study with the National Institute of Science and Technology identified several of these nonmagnetic stainless steels as candidate structural materials for superconducting magnet systems like those that will be used in the superconducting supercollider.

Superior physical properties in steels made from rapidly solidified powder were shown to result from gases entrapped in the structure. This joint BOM-Department of Energy effort provides sufficient understanding of the mechanisms involved to allow early transfer of the technology that promises to expand the uses of iron-based stainless steels. Researchers also demonstrated the feasibility of consolidating these powders by using explosive forces.

New processes used to synthesize ceramic powders and parts resulted in superior properties and higher reliability. The resulting ceramics could be used as possible substitutes for strategic and critical metals in some areas. Examples include:

- a new titanium nitride-aluminum nitride-alumina composition was developed that provides improved fracture toughness. A patent application has been filed.
- the Bureau-developed turbomill, which is used to grind ceramic powder to submicron particle sizes, was shown to be highly effective in blending ceramic powders and fibers together to produce highly uniform composites. Such uniformity is normally difficult to achieve.
- a vapor-phase technique produces nitride powders that are more chemically active than standard powders. These powders produce superior properties in the densified material.

The Bureau successfully developed the use of oxynitride glass for brazing silicon nitride ceramics--a development that allows the fabrication of complex shapes from separate pieces. This advance moves ceramics one step closer to being viable substitutes for materials made from strategic and critical minerals. The oxynitride glass also exhibits unique physical properties that might make it a useful structural material in itself.

Studies on the non-destructive evaluation of ceramics using ultrasonic techniques led to a non-contacting, laser-based method for measuring changes in microstructure at high temperatures. This important achievement will be used in subsequent research on sintering--the fusing together of heated nonmetallic material.

Research on Bureau-developed sulfur concrete has been completed and the resulting technology transferred to industry. At least one commercial firm in the United States has been licensed to manufacture and market this corrosion-resistant construction material. Sulfur concrete should help reduce corrosion damage at industrial plants which work with acids and salts.

New inorganic polymers made from phosphazines exhibited high strength and good chemical resistance. These advanced plastics may thus provide a new structural material.

Proposed Work in FY 1991:

The joint BOM-Department of Energy research on rapid solidification processing of iron-based alloys will focus on the relationship between powder synthesis and properties. Now that the strengthening mechanism is reasonably well understood, emphasis will shift to determining factors that affect reproducibility and predictability of powder and test specimen properties.

Research to understand the factors governing the reactions that occur during combustion sintering of intermetallic/ceramic composites will focus on two intermetallics--titanium aluminides and iron aluminides. Scientists hope to identify the reaction parameters that provide the best composition and microstructure. These advanced materials are domestically available substitutes for strategic superalloys.

The Bureau will continue to investigate methods of synthesizing oxynitride glasses. The optical, electronic, mechanical, and chemical properties of these materials will be determined. They can be used as structural materials, oxynitride glasses are potential substitutes for some imported strategic and critical materials.

Basic research on the microstructure and properties of oxide, carbide, and metal-aluminum oxynitride ceramics will continue. Scientists will investigate factors influencing fracture toughness and other key properties that limit use of these ceramics as substitutes for materials made from strategic and critical metals. New work will address problems in the use of microwave heating in sintering and joining ceramic material. The laser-based, non-contacting nondestructive technology for evaluating ceramics will be utilized in high-temperature studies.

Outyear Plans:

Materials failure from the combined effects of wear, fracture, and corrosion is a very costly national problem. It affects consumption of natural resources, waste disposal, overseas purchase of strategic and critical minerals, and machine breakdown with subsequent layoffs and/or injuries. Therefore, research on the synergistic effects of mechanical, chemical, and biochemical damage will be expanded.

Materials must, of course, perform under these conditions. The scientific community, however, knows little about the basic mechanisms involved in wear and corrosion and in protecting materials from such deterioration. The Bureau of Mines will address this problem from a generic rather than an application-specific viewpoint. Developing the necessary knowledge base requires an increased capability in the area of surface science—the study of the chemical reactivity and physical deterioration of surfaces. Such expertise will be developed in-house, supplemented when possible by capabilities available in other Federal laboratories.

Substitution research will emphasize new processing science to improve the properties of domestically produced materials and broaden the scope of their applications. Studies will focus on powder metallurgy science and technology (for example, using electromagnetic and microwave technology to fabricate net-shape composite, intermetallic, and/or ceramic parts from domestically available raw material).

Research will provide increased understanding of the mechanisms involved in various processing technologies.

DECREASE FOR FY 1991:

(Dollar Amounts in Thousands)

		FY 1991 Base	FY 1991 Estimate	Change
Materials Research	$	9,314	8,664	-650
	(FTE-T)	(112)	(110)	(-2)

Two projects will be concluded and another will be continued at a reduced effort. The two concluded projects, one dealing with polymers and the other dealing with catalysts, represent important research, but have reached a point where industry can begin technology development. The project continuing at a reduced level addresses new phenomena in the electrodeposition of metals. It is of sufficiently long-range that the impact of delay will be minimal.

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SUBACTIVITY DECREASES FOR FY 1991

(Dollar Amounts in Thousands)

		FY 1991 Base	FY 1991 Estimate	Decreases
Minerals and Materials Science				
Minerals Research	$	17,171	15,821	-1,350
	(FTE-T)	(282)	(274)	(-8)
Materials Research	$	9,314	8,664	-650
	(FTE-T)	(112)	(110)	(-2)

* * * * * *

OBJECT CLASSIFICATION DISTRIBUTION

The object class detail for the $2,000,000 decrease for the Minerals and Materials Science subactivity is as follows:

	FTE-T	Amount
Personnel Compensation	(-10)	$ -234,000
Personnel Benefits		-37,000
Other services		-1,729,000
Total		$ -2,000,000

Justification of Program and Performance

SUBACTIVITY OVERVIEW

ACTIVITY: RESEARCH
SUBACTIVITY: ENVIRONMENTAL TECHNOLOGY

(Dollar Amounts in Thousands)

Program Elements		1990 Enacted To Date	1990 Adjusted Approp	1991 Base	1991 Estimate	Inc. (+) Dec. (-) From Base
Control of Mine Drainage and Liquid Wastes	$ (FTE-T)	5,646 (77)	5,571 (77)	5,657 (77)	3,907 (65)	-1,750 (-12)
Solid Waste Management and Subsidence	$ (FTE-T)	5,914 (83)	5,836 (83)	5,923 (82)	5,173 (76)	-750 (-6)
Abandoned Mined Land Reclamation Research	$ (FTE-T)	2,000 (17)	1,973 (17)	2,002 (17)	2,002 (17)	— (—)
National Mine Land Reclamation Center	$ (FTE-T)	1,500 (—)	1,480 (—)	1,500 (—)	— (—)	-1,500 (—)
Total Requirements	$ (FTE-T)	15,060 (177)	14,860 (177)	15,082 (176)	11,082 (158)	-4,000 (-18)

IMPACT OF PUBLIC LAW 99-177

	1990 Enacted To Date	PL 99-177 B.A.Cancellation	1990 Adjusted Approp.
Environmental Technology	15,060	-200	14,860

As a result of the $200,000 reduction, research in all program areas will be stretched out, resulting in delays in obtaining research results. The reductions will primarily affect in-house research, thereby resulting in some delays in acquiring scientific equipment, supplies, and materials. Where possible, anticipated program efforts will be delayed rather than cancelled.

ENVIRONMENTAL TECHNOLOGY

The mining, minerals processing, and recycling activities that produce the Nation's domestic minerals, materials, and fuels generate large quantities of wastes. These wastes are present at active and closed operations. They pose a variety of serious environmental problems. The Bureau's Environmental Technology Research Program is designed to provide the Nation with the knowledge and technology needed to reduce environmental problems while ensuring an adequate supply of minerals from domestic resources.

The Environmental Technology research program is composed of four program elements: Control of Acid Mine Drainage and Liquid Wastes, Solid Waste Management and Subsidence, Abandoned Mined Land Reclamation Research, and the National Mine Land Reclamation Center. Work under the first element seeks to minimize and prevent contamination of the Nation's waters by acid mine drainage and toxic pollutants from mines and waste disposal sites. The Solid Waste Management and Subsidence element focuses on developing better technology for disposal of mining and mineral processing wastes from current operations and for correcting environmental damage caused by past mining and processing activities. It also seeks ways to minimize and prevent subsidence and better methods for reclaiming and closing mines and waste disposal sites. The third element addresses environmental problems associated with reclaiming abandoned coal mines. The fourth element was established by Congress in FY 1988 to complement and accelerate research on the surface effects of abandoned surface and underground coal mining.

The long range goal of the Environmental Technology program is to reduce the volume and toxicity of liquid and solid wastes and to minimize land disturbances so that future mining and mineral processing operations have as little negative impact on the environment as possible. Short range goals include solving critical environmental problems posed by past mining and mineral processing operations and developing technology to help the mineral industry meet federal and state regulations.

Producing minerals requires the management of large volumes of waste materials. These range from overburden and waste rock to tailings, slags, and sludges. Metal and nonmetal (non-coal) wastes are generated at a rate of 1 to 3 billion tons per year depending on mineral demand. Approximately the same amount of waste is generated by the coal industry.

The copper, precious metals, phosphate, and iron ore industries account for the majority of non-coal wastes. For example, to produce just one ton of 99.9 percent pure refinery copper from an ore containing 0.7 percent copper (a relatively high grade ore in the United States), an operator may generate about 435 tons of waste rock, overburden, tailings, and slag (Figure 1). In 1988, the copper industry produced over 1.4 million tons of copper and generated approximately 625 million tons of solid waste.

The Environmental Protection Agency (EPA) estimates that during the last century, non-coal mineral production led to the accumulation of over 50 billion tons of solid wastes. The Bureau estimates that abandoned coal and metal mines and the associated piles of mine waste adversely affect over 12,000 miles of rivers and streams and over 180,000 acres of lakes and reservoirs in the U.S. Acid drainage from coal mines has resulted in more than 5,000 miles of sterile streams. In addition mine subsidence and reclamation problems exist on thousands of acres of valuable residential, industrial, and agricultural lands.

Cleaning up land and water contaminated by mineral production activities is neither easy nor inexpensive. The cost of cleaning up mineral waste sites on the Environmental Protection Agency's National Priorities List is staggering. A recent EPA study of the Midvale (Utah) tailings site estimated that decontamination and remediation would cost $1.5 billion. This property is a relatively small area associated with a mill and smelter. Cost estimates for other mineral sites are equally exorbitant. The program for the Butte (Anaconda, Montana) site, which is entering its sixth year, is expected to cost more than $1 billion. EPA has not yet defined remedial programs for areas like Bunker Hill (Kellogg, Idaho) or the Tri-State Zinc-Lead District of Oklahoma, Kansas, and Missouri.

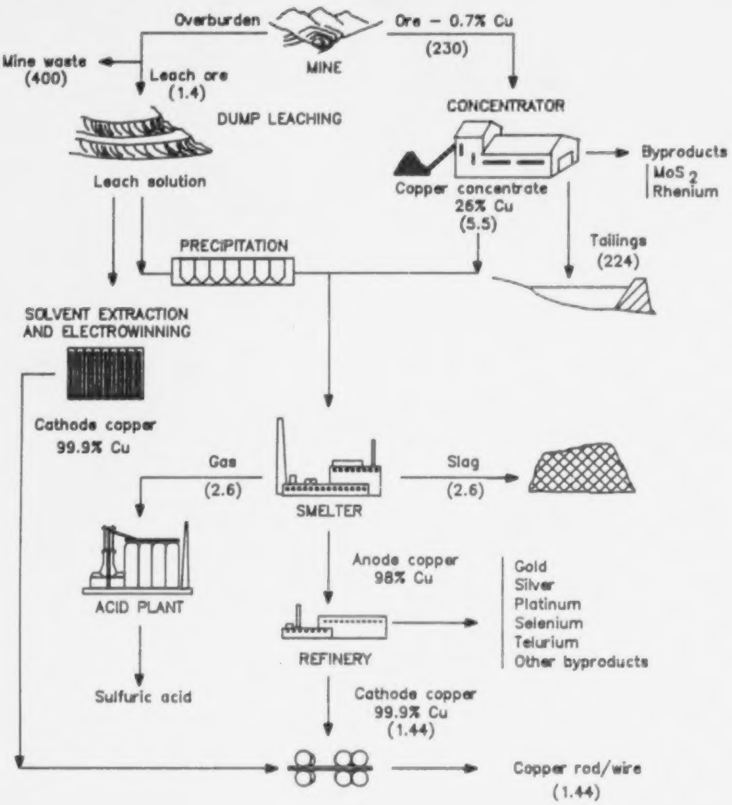
The management of the large volumes of wastes generated from active operations and liability for cleanup of past wastes impose heavy economic burdens on the mineral industry. These burdens hurt the competitiveness of U.S. mineral producers in international markets. The Federal government shares the liability for cleanup of mineral wastes on public lands.

Mineral wastes are regulated under a number of statutes:

o The Surface Mining Control and Reclamation Act of 1977 (SMCRA) imposes environmental controls on active coal mines, and mandates the cleanup of the Nation's abandoned coal mined lands. The Office of Surface Mining Reclamation and Enforcement (OSM) estimates that there are about 9,000 high priority abandoned coal mine problem areas nationwide that require reclamation at an estimated cost of $5.8 billion dollars.

PRODUCTION OF COPPER, IRON, GOLD, AND PHOSPHATE GENERATE MANY TYPES OF SOLID AND LIQUID WASTES

In 1988, the copper industry produced 1.44 million tons of copper and generated approximately 625 million tons of solid waste from four principal waste streams: mine waste rock, overburden, tailings, and slag.


Overburden
Ore – 0.7% Cu
(230)
MINE
Mine waste
(400)
Leach ore
(1.4)
DUMP LEACHING
CONCENTRATOR
Byproducts
MoS 2
Rhenium
Leach solution
Copper concentrate
26% Cu
(5.5)
Tailings
(224)
PRECIPITATION
SOLVENT EXTRACTION
AND ELECTROWINNING
Cathode copper
99.9% Cu
Gas
(2.6)
SMELTER
Slag
(2.6)
ACID PLANT
Anode copper
98% Cu
Gold
Silver
Platinum
Selenium
Telurium
Other byproducts
REFINERY
Sulfuric acid
Cathode copper
99.9% Cu
(1.44)
Copper rod/wire
(1.44)

Numbers in parentheses represent
millions of metric tons, 1988.

Figure 1: Material flow for the production of copper metal and its byproducts. Solid wastes generated are mine waste rock, leached rock, tailings, and slag.

- The EPA, under the Resource Conservation and Recovery Act (RCRA) of 1976, is in the process of formulating a regulatory program for solid wastes from active mining and mineral processing operations that produce minerals other than coal. Estimated annual compliance costs could approach $1 billion.

- Areas contaminated as a result of mining and mineral processing are subject to regulation under the provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and subsequent modifications enacted in 1986 as the Superfund Amendments and Reauthorization Act (SARA). EPA also regulates sites where a release (or substantial threat of a release) of hazardous substances, pollutants, or contaminants is occurring. Nearly 30,000 sites have been identified and studied under these laws; more than 1,200 have been put on the National Priorities List as locations where remedial actions are necessary. The Bureau of Mines has determined that 98 of these are sites contaminated by past mining, mineral processing and metals recycling operations (See Figure 2). Sites contaminated by lead from battery recycling are the most numerous; uranium and the common metals (aluminum, copper, silver, lead-zinc, and steel) account for the second largest group of sites.

The Bureau coordinates its Environmental Technology research with several outside organizations. Input from academia and other government agencies, including the National Academy of Sciences (NAS), the Office of Surface Mining Reclamation and Enforcement (OSMRE), and the EPA is used in formulating the program. For example, an NAS study helped the Bureau set priorities for research under Section 401(c)(6) of the Surface Mining Control and Reclamation Act. This research was transferred from OSMRE to the Bureau in FY 1987. The Bureau uses cooperative efforts with industry and other government agencies to reduce the requirement for Federal funds, prove concepts in actual mining situations, and aid in technology transfer. Such efforts include subsidence studies at active coal mines, soil decontamination projects at EPA Superfund and National Park Service sites, and water decontamination work at a Bureau of Indian Affairs location. The Bureau also works with the precious metals industry to address environmental problems associated with the use of cyanide. An example of mutually beneficial international cooperation in the environmental area is the Bureau program with Yugoslavia. Two projects dealing with subsidence and reclamation were conducted with the Tuzla Mining Institute. The Bureau also coordinates its research on mine tailings with the Canadian Center for Mineral and Energy Technology (CANMET).

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AUTHORIZATION: 30 U.S.C. 1-11

OBJECTIVES:

To conduct research that will enable the Nation to:

- Develop technologies that provide cost-effective ways to comply with environmental standards.

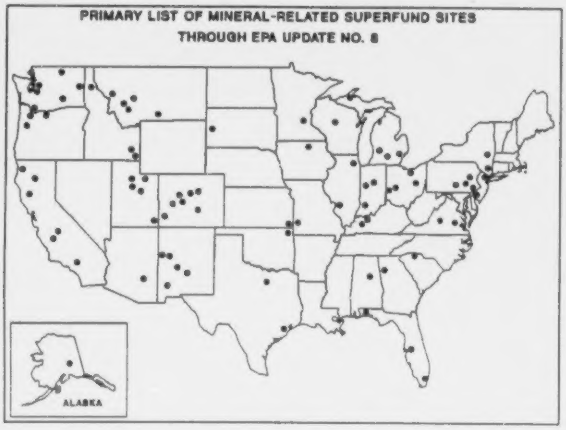
- Develop technologies to cleanup land and water contaminated by past and present mining and mineral processing activities.

- Develop mining and mineral processing systems that reduce the quantities of waste generated and minimize environmental damage.

- Ensure that current and future environmental regulations that affect the mineral industry are based on sound scientific data.

RELATED BUREAU OF MINES ACTIVITIES: The Mineral Institute Generic Technology Center for Mineral Industry Waste Treatment and Recovery conducts research that complements that of the Environmental Technology program. This Center, located at the University of Nevada-Reno, and its affiliate universities conduct research in minerals wastes and related environmental problems. The Bureau's staff works with the Generic Center to ensure that its research is relevant and supports the Bureau's in-house program. Bureau personnel serve on the Center's Advisory Committee.

SUPERFUND SITES POSE SERIOUS THREATS TO HUMAN HEALTH AND ENVIRONMENT


PRIMARY LIST OF MINERAL-RELATED SUPERFUND SITES
THROUGH EPA UPDATE NO. 8
ALASKA

These 98 sites have resulted from past mining, mineral processing, and metallurgical practices.

Figure 2: Mineral-related Superfund sites.

This tunnel was constructed in 1898 by mine owners to drain the mines. The drainage water contains many undesirable metals that contaminate nearby surface waters.

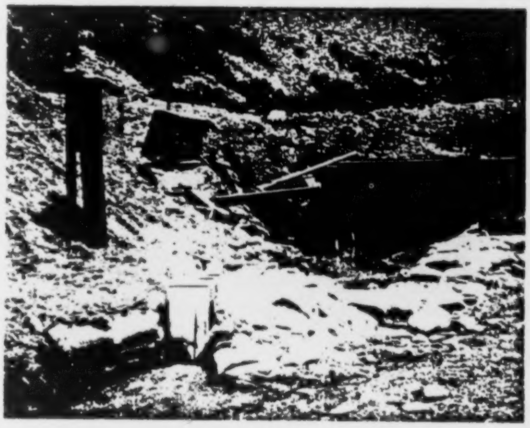


Figure 3: Acid Mine Drainage from the Yak Tunnel, Leadville, Colorado

SURFACE AND GROUNDWATER RESOURCES MUST BE PROTECTED DURING MINING AND AFTER MINE CLOSURE

Heap leaching low grade ores with cyanide allows economic recovery of gold from ores containing quantities that are invisible to the eye.

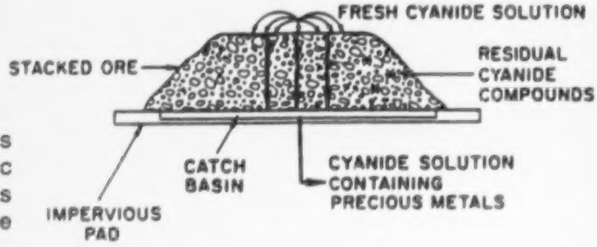

FRESH CYANIDE SOLUTION
STACKED ORE
RESIDUAL CYANIDE COMPOUNDS
CATCH BASIN
CYANIDE SOLUTION CONTAINING PRECIOUS METALS
IMPERVIOUS PAD

Figure 4: Gold recovery by cyanide leaching has many environmental concerns.

New concept in wetlands technology utilizes subsurface feed to introduce acid mine drainage directly into the active anaerobic bottom-zone where neutralization takes place.

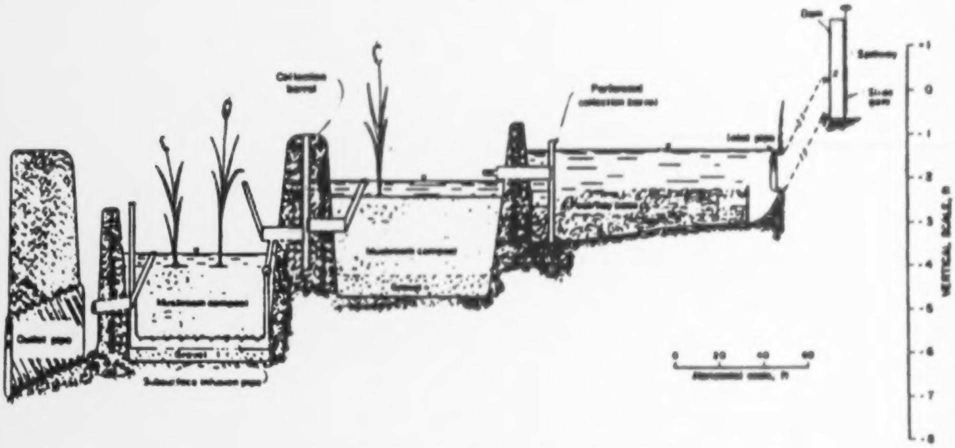

Dam
Spillway
Collection barrel
Perforated collection barrel
Inlet pipe
Mushroom compost
Mushroom compost
Gravel
Gravel
Outlet pipe
Subsurface infusion pipe
0
20
40
60
Horizontal scale, ft
VERTICAL SCALE, ft
+1
0
-1
-2
-3
-4
-5
-6
-7
-8

Figure 5: Engineered wetlands offer a low-cost passive method to neutralize acid water.

* * * * * *

CONTROL OF MINE DRAINAGE AND LIQUID WASTES

OVERVIEW: The potential for contamination of surface and ground waters through discharge or seepage of water from mines and mineral processing operations or runoff from solid wastes is one of the most significant environmental issues facing the minerals industry. Mine drainage coupled with the release of toxic heavy metals from many historic western metal mines has polluted a significant number of waterway's (Figure 3). Acid waters from coal mining operations have produced thousands of miles of sterile streams. The increased use of cyanide to process precious metals is creating a new environmental problem. Animals and migratory birds are attracted to impounded waters in arid areas and may be poisoned. New control technologies must be developed to protect wildlife.

The Bureau seeks to minimize water contamination from past, present, and future mining operations. To accomplish this goal, research is conducted in the following areas:

- o Understanding the fundamental chemical, physical, and biological processes involved in the production of acid waters and release of toxic metals.
- o Cost-effective environmental control technologies to bring mine water and liquid processing wastes into compliance with environmental regulations.
- o More complete recovery systems that eliminate or reduce potentially harmful or toxic components in wastes.
- o Technology for treating hazardous liquid wastes.
- o Techniques to predict how mining affects local water quality.
- o New mining and processing technologies that eliminate or reduce the source or pathways of water contamination.

PROBLEM: Potential contamination of surface and ground waters is one of the most significant environmental problems that can result from mining and mineral processing. Drainage from surface and underground metal mines may contain toxic heavy metals; mine spoils, stockpiled ores, and solid mineral processing wastes can yield similar contaminants. Accidental discharge of mine and mineral processing waters, leakage from heap leaching operations, runoff after rain or snow, and failure of dams and dikes at waste ponds also result in surface and ground water contamination.

Coal mining and processing causes another group of problems. Acid mine drainage can make streams unfit for drinking, recreation, or industrial use. According to a 1979 Bureau study, achieving a 96-percent abatement of acid mine drainage would cost almost $10 billion. The main source of acid mine drainage is abandoned underground coal mines. Present regulation of the coal mining industry has reduced the effects of acid waters from active operations. The need to correct costly acid drainage problems has kept companies from remining certain sites. This disincentive for remining reduces the Nation's coal reserves.

Modern precious metal processing presents still another set of potential environmental problems that are increased because of the rapid growth in this industry. Domestic gold production increased 33 percent between 1986 and 1987 and another 30 percent in 1988.

Most gold is produced through a cyanidization process (Figure 4). The growth of heap leaching in which ore is placed on clay or plastic liners and cyanide trickled through the heaps is of particular concern because of the uncertainties concerning the long-term environmental persistence of cyanide. Major environmental concerns are: leakage from beneath heap leaching pads or solution ponds and subsequent migration of cyanide or heavy metals through the soil to ground waters; the lack of scientific data concerning the long term stability of cyanide compounds and their pathways and fate while migrating through soils; fatalities of migratory birds and other wildlife at ponds located in arid areas; and the absence of closure technology that has been proven to be environmentally safe. EPA is currently developing regulations for cyanide leaching of precious metals under RCRA.

Most leaching operations take place in the west and southwest with little hazard to deep aquifers. Gold leaching operations however, have recently expanded in the southeastern United States in areas with different soils and climates and shallow aquifers. Cyanide or heavy metals may leak from beneath heap leaching pads or from the holding ponds that support gold recovery and provide storage sites for used cyanide solutions. The contaminants could then move through the soil to ground waters.

PROGRAM:

Progress in FY 1990 and Prior Years:
In FY 1989 and FY 1990, field studies of metal mine drainage concentrated on:

o developing hydrogeologic techniques to identify acid-forming zones in underground mines and pathways that could prevent water from entering those zones
o developing reliable field sampling techniques for tailings from mineral processing operations to identify factors that influence the release and migration of contaminants from these wastes
o identifying the long-term effects of mining in historic mining districts on surface and ground water quality, correlating these effects with local hydrology, geology, and climate, and developing models that predict the contamination potential of mine wastes.

This work included field studies of several Superfund sites where mining and mineral processing occurred and hazardous waste sites on Federal and BIA lands. The Bureau's efforts complement hydrology studies conducted by the U.S. Geological Survey (studies which are largely devoted to broad scale regional hydrology).

In a cooperative study with the University of Idaho, a gas tracer technique has been developed to map acid-producing zones and water-infiltration paths in underground mine workings. The ability to isolate these zones may lead to the development of grouting and hydrogeologic control methods that permanently eliminate acid production in and metal migration from underground mine workings. Such methods would be far more cost-effective than the water treatment plants now used--plants that must continue operating for as long as contaminated water drains from the mine.

In a cooperative effort with the Bureau of Indian Affairs, the Bureau identified technological options for decontaminating 400 million gallons of water contained in open pits on the Spokane Indian Reservation. Officials could use these options to treat the contaminated water should it become a threat to waters in the Grand Coulee Dam National Recreational area.

In a cooperative program with Environmental Protection Agency Region III (Mid-Atlantic states) and a mineral producing company, the Bureau investigated the feasibility of using man-made wetlands to purify water discharged from a zinc smelter waste. Researchers began studying plants and their role in removing metals in a 3-year effort to modify the wetlands technique that has been used successfully to treat acid mine drainage at coal mines.

Studies of the leaching characteristics of metal mine tailings under realistic field conditions were used to predict the potential of tailings to contaminate surface or ground waters. Results suggested that EPA leaching tests, which were originally developed for municipal waste sites, may not accurately indicate the dissolution and contamination potential of mine wastes.

Laboratory research concentrated on developing new unit processes for cost-effective and environmentally safe decontamination of liquid wastes that contain dilute, but toxic concentrations of heavy metals and mineral processing residuals. The expensive chemical treatment systems used require the constant addition of chemicals and produce toxic sludges--thus creating a new waste disposal problem. The Bureau's work has emphasized (1) low-cost passive treatment systems (like wetland ecosystems) that require little maintenance and offer long-term solutions to water decontamination problems and (2) new unit processes that recover toxic metals without generating voluminous sludges.

Bacteria, which can change the form and mobility of metals, often play a role in contaminating water. Other bacteria can play a beneficial reverse role in detoxifying water. The Bureau investigated the biological processes involved in water contamination and methods to control the activity of microorganisms. These studies include the culture of organisms to remove toxic metal ions. Other microorganisms were cultured and tested for neutralizing acid sulfate waters. These microorganisms could significantly reduce acid formation at its source.

Dead biota (yeast, bacteria, and aquatic plants) immobilized in porous plastic beads proved effective in reducing cadmium, copper, manganese, and zinc to levels that meet National Drinking Water Standards. A technique for porous bead formation and incorporation of biota or solvent extractants has been developed. Porous bead-biota systems can treat high volumes that contain contaminants in dilute concentrations; they are also easy to handle.

Researchers investigated other new approaches to water decontamination including electrolytic deposition, emulsion membranes, and adsorption of metal ions on natural minerals such as zeolites. These approaches could treat water without producing sludges and recover usable metals.

New studies of wetlands established that acid neutralization and metal removal takes place in the lower portions of the ecosystem where there is no air or free oxygen. Researchers developed techniques to introduce coal mine acid waters directly into this zone rather than feeding it into the surface of the wetland. (Figure 5).

Two projects that address the use of cyanide in processing gold were initiated in FY 1989 and continued in FY 1990. Researchers examined old tailings from a South Carolina gold processing operation that dated back to 1930 to determine whether cyanide compounds remain at the site. Data from this investigation will help scientists identify the long-term behavior of cyanide in humid climates and develop environmental protection measures for gold producers now operating in the southeastern part of the country. Scientists also studied cyanide chemistry in western heap leaching operations to develop effective ways to close and reclaim these sites so that they will pose no future threat to the environment.

Proposed Work in FY 1991:

The Bureau has developed, on a laboratory scale, several new technologies for water detoxification. In FY 1991, research will begin to incorporate these technologies into a systems engineering methodology for treating large volumes of contaminated wastes. The objective of this effort will be to evaluate the combined use of several unit processes for water treatment, each of which offer specific advantages and disadvantages when applied to water containing several different contaminants. Techniques to be treated include modified chemical precipitation/oxidation processes, bioadsorption, bioreduction, electrolytic deposition, emulsion membranes, and adsorption on naturally occurring minerals such as zeolites. The Bureau believes this research will yield cost-effective systems for treating large volumes of water containing multiple contaminants. Such systems will meet regulatory standards, produce less toxic sludges than conventional treatment processes, and allow the recovery of marketable metals to offset treatment costs.

In addition to this coordinated engineering study, the Bureau will continue to evaluate and field test other promising new water treatment processes. These processes include the use of:

- o Cultured bacteria to convert toxic metal ions to non-toxic compounds (potential applications include removing selenium from mill and agricultural drainage waters).
- o Porous plastic beads containing biota and solvent extractants to treat waters contaminated by acids, heavy metals, and process chemicals.
- o Porous electrodes to decontaminate acid mine and mineral processing waters.
- o Natural zeolites to remove heavy metals from mining and mineral processing waters.

The Bureau will accelerate the development of biotechnology systems that mitigate the production of acid and the dissolution of heavy metals. Additional work will be done to develop techniques for predicting these occurrences. Researchers will also study the use of sulfate-reducing bacteria to treat mine waters.

Research will continue to develop safe methods for closing and reclaiming cyanide heap leaching operations in western and eastern states. Through joint meetings with industry, the Bureau has identified six priority areas for research: mine closure, cyanide destruction, cyanide seepage from heaps and ponds, wildlife protection, treatment of ores with acid-forming minerals, and alternatives to cyanide. The Bureau will conduct in-house research on mine closure and attempt to arrange cost-sharing research with industry in the other priority areas.

Research will continue on the hydrogeological and geochemical factors involved in acid mine drainage and in the dissolution and migration of toxic metals from coal and metal mines. Combined field and laboratory tests on the hydrogeological, climatological, and mineralogical factors involved in water contamination from waste tailings will continue in order to develop effective prediction and control technology. Additional studies on the feasibility of recovering mineral from liquid wastes will be conducted.

It is estimated that the accelerated oxidation of pyrite by bacteria causes about 80 percent of the acid water from coal mines. Although construction of artificial wetlands represents a promising technology for mitigating acid coal mine drainage, control of acid production at the source by inhibiting bacteriological oxidation of pyrite is a preferred option. Such control would reduce the need for wetlands or chemical water treatment. The Bureau will continue work on bactericides that kill or inhibit pyrite oxidizing bacteria and begin new work using cultured microorganisms that essentially reverse the acid-forming reactions by reducing sulfate and others that selectively kill acid-producing bacteria.

The study of biological treatment for surface water discharges from zinc smelter wastes will examine the effectiveness of existing natural wetlands and determine how the wetlands technology developed for acid coal mine drainage can be modified to treat drainage from smelting wastes. Improved methods for creation of constructed wetlands for water treatment is a component of the DOI Wetlands Initiative. Experiments will test the long-term removal of metals and identify the best plants for the wetland treatment system. Engineering studies are planned to develop a technique that uses on-site alkaline waste material to neutralize acid seepage from the waste and to use of sulfate reducing bacteria to purify metal containing waters.

Several hazardous waste sites on Federal lands will be evaluated as potential sites for the development and demonstration of decontamination technologies. Multidisciplinary studies will continue to address the problems at major Superfund and hazardous waste sites related to mining and mineral wastes. Site-specific solutions devised in prior years will be developed for generic application and technology transfer. The development of more cost effective technology will help reduce the costly liability for cleaning up mineral sites. The Bureau will coordinate cleanup activities on Federal lands with other Federal agencies.

Outyear Plans:

New unit processes that selectively detoxify liquid wastes by recovering metals will be field demonstrated by FY 1993. Systems that combine unit processes will be developed by FY 1995; they should have application to a variety of water detoxification problems. These systems may greatly reduce or eliminate sludges produced by conventional chemical water treatment processes and cleanup costs may be partially offset by the recovery of metals from the wastes. By 1993, the Bureau will conduct demonstration projects using cementation and alkaline agents to isolate and abate acid mine drainage at abandoned mines. By 1995, researchers will develop and demonstrate techniques for filling in surface mines that should reduce or perhaps prevent the formation of acid mine drainage at these sites. They will also collect data to demonstrate the effectiveness of biological techniques for treating acid mine drainage.

DECREASE FOR FY 1991:

(Dollar Amounts in Thousands)

		FY 1991 Base	FY 1991 Estimate	Change
Control of Mine Drainage and Liquid Wastes	$	5,657	3,907	-1,750
	(FTE-T)	(77)	(65)	(-12)

Research to understand the fundamental processes of metals release from metal mine wastes and the development of permanent mine closure technology for inactive metal mine sites in the west will be curtailed. Research on controlling acid mine drainage and metal recovery from tailings and drainage water at a major western metal mining related Superfund site will be terminated. The Bureau's effort to expand the development of biological methods to treat acid coal mine drainage will continue but research on acid generation from coal refuse and the effects of hydrology will be delayed.

* * * * * *

SOLID WASTE MANAGEMENT AND SUBSIDENCE

OVERVIEW: The complex and varied solid waste from mining and minerals processing operations includes overburden, waste rock, tailings, slags, sludges from waste water treatment, and dusts from air pollution control devices. Minerals industry and recycling wastes account for approximately 40 percent of all solid waste generated in this country each year. Most of these wastes contain relatively low concentrations of toxic metals and pose less of a threat to human health and the environment than hazardous wastes. However, the volume of these wastes, 1 to 3 billion tons per year and over 50 billion tons accumulated over the past 100 years, means that they must be managed carefully to prevent significant deterioration of the surrounding environment. The EPA recently listed some mineral processing wastes as hazardous wastes under RCRA. These include spent potlining from aluminum reduction cells. The abandoned mined lands in coal and other mining producing regions present serious environmental problems associated with unreclaimed mines and refuse impoundments, waste piles from coal-cleaning plants, mine subsidence, and mine fires.

The Bureau works to develop improved solid waste management techniques that eliminate or greatly reduce environmental damage from active and abandoned facilities. Research is conducted in the following areas:

- o Technology to remove or recover toxic components of mining and mineral processing wastes.
- o Processes to immobilize toxic constituents of solid wastes or to render them environmentally benign.
- o Decontamination technology for minerals-related hazardous wastes from past operations.
- o Technology to minimize the harmful effects of subsidence--movements of the earth's surface caused by underground mining.
- o Improvement in the fundamental scientific data upon which minerals solid waste regulations are based.

PROBLEM: Most of the solid waste generated by the mineral industry is from mining, beneficiation, and leaching operations (Figure 6). Coal mining and processing also generate a significant amount of solid waste. Because mining and mineral processing operations involve diverse technologies, many different ore bodies, and a variety of geographic locations, solid waste generated at any specific site may require waste management practices different from those needed to handle similar wastes produced at another operation. Cleaning up some of these wastes means reducing the concentration of toxic contaminants from the parts-per-million to the parts-per-billion range. The scale of mining and mineral processing operations and the distinct nature of some of the wastes involved make the problems even more complex. For example, copper smelters generate huge tonnages of solid wastes; each domestic smelter, however, uses unique processing techniques that makes its wastes somewhat different from those produced at other smelters. Major advances in technology are needed to address these problems.

The large volume of solid waste generated by the mineral industry has created strong public concern about preventing environmental damage and protecting human health. The EPA is developing Federal regulations for mining wastes under the RCRA and is working with states, several of which have enacted or proposed their own mining waste regulations.

The greatest environmental concern posed by these wastes is the potential leaching and mobilization of toxic metals and other constituents and the resulting pollution of surface and ground water. Cleaning up air and water pollution creates additional solid waste disposal problems because the technologies now used to remove contaminants collect them as dusts or sludges. Although the methods used to mine and process minerals have been updated to meet more stringent air and water quality standards, the management of solid wastes requires intensive research to develop environmentally sound ways to dispose of mining and minerals processing wastes as well as dusts and sludges produced by pollution control measures.

More than one-half of the approximately 1200 sites on EPA's National Priorities List involve metal contamination from manufacturing and processing. Congress directed EPA to seek permanent cleanup of these sites; however, existing decontamination technology cannot meet this goal. Research on adapting extractive metallurgical technology and using biotechnology promises new ways to clean up sites contaminated by metals.

Although fewer than 10 percent of the Superfund sites are associated with primary mineral production, the large volumes of wastes present cause them to be among the most costly to clean up. Contamination at mineral sites is often the result of obsolete waste management practices dating back nearly a century. Improvement of current production and waste management methods will minimize the possibility of creating future Superfund-type problems.

Subsidence occurs above underground coal mines. It can endanger public safety and cause significant property damage to surface structures such as homes and commercial buildings as well as to valuable farmland. More than 7 million acres of the Nation are underlain by abandoned coal mines; 2 million of these acres are estimated to be susceptible to subsidence. Some 500,000 acres are under urban areas. Subsidence over metal mine workings, though less extensive than that which occurs with coal mining, poses serious safety hazards in many of the historical mining areas, such as the Tri-State Lead-Zinc District (Missouri, Kansas, and Oklahoma) and the old mining camps in the Rocky Mountain region.

PROGRAM:

Progress in FY 1990 and Prior Years:

The Bureau accelerated solid waste research in FY 1989 and FY 1990 to address the environmental problems and issues associated with pending EPA regulation of hard rock mining and metallurgical wastes. These large-volume, low-toxicity wastes include those produced primarily by the copper, phosphate, gold, lead/zinc, and iron ore mining industries.

For example, waste piles containing over 200 million tons of tailings exist in the lead mining districts of the midwest (Figure 7). Many are located in or adjacent to towns and communities. Lead and dusts from these piles present environmental problems. Technology originally developed for recovering specific sulfide minerals from lead concentrate has been tested for removing residual lead and other minerals from abandoned tailings piles (Figure 8). Preliminary results indicate that the technology removes enough of the lead and other sulfide-bearing minerals to make the waste environmentally benign. The treated tailings contain sufficient calcium compounds for use as agricultural lime. Scientists also investigated the possibility of filling in abandoned lead mines in the district with the

40% OF THE NATION'S SOLID WASTES ARE PRODUCED FROM MINING AND MINERAL PROCESSING OPERATIONS

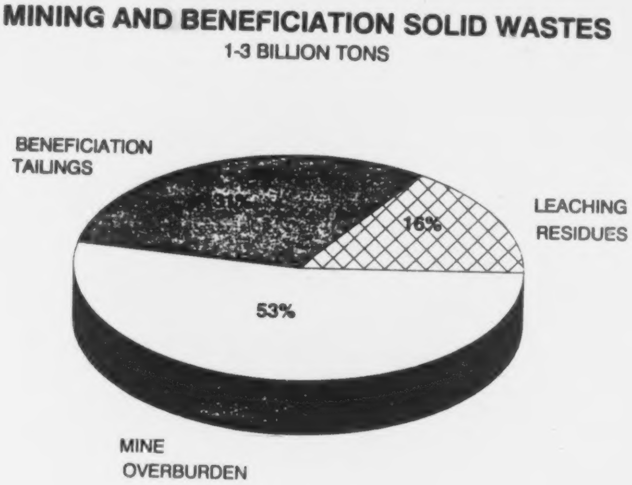


Figure 6: Mining, beneficiation, and leaching produce nearly 3 billion tons of waste annually.

Figure 7: Abandoned metal mine tailings piles in the midwest pose problems from dust and lead contamination.

NEW TECHNOLOGY OFFERS POTENTIAL FOR RECOVERY OF TOXIC METALS FROM MINE WASTE PRODUCTS

New unit system capable of high throughput is being evaluated for treating large volume wastes.

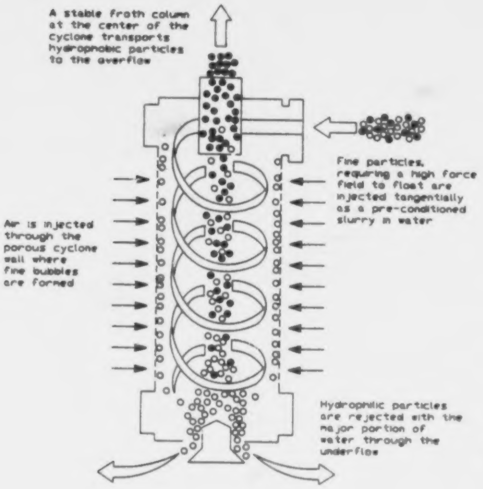

A stable froth column at the center of the cyclone transports hydrophobic particles to the overflow
Fine particles, requiring a high force field to float are injected tangentially as a pre-conditioned slurry in water
Air is injected through the porous cyclone wall where fine bubbles are formed
Hydrophilic particles are rejected with the major portion of water through the underflow

Figure 8: The air-sparged hydrocylone can separate contaminants by particle size, density, and flotation.

Local climate, geology, hydrology, dam construction design, tailing properties, and biological activity all impact on the release and migration of toxic metals from solid waste sites.

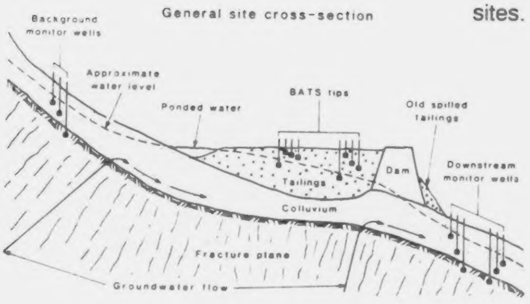

General site cross-section
Background monitor wells
Approximate water level
Ponded water
BATS tips
Old spilled tailings
Dam
Downstream monitor wells
Tailings
Colluvium
Fracture plane
Groundwater flow

Figure 9: Cross section of experimental field site used to determine the factors that cause contaminant release.

treated tailings. Using tailings for backfilling would remove them from the surface and provide underground support for the abandoned mines.

Basic research continued to determine the sources of contamination, the mechanisms of metal dissolution, and the way contaminants move and change once they enter the surrounding environment. Research has focused on characterizing the mineralogy, chemistry, and hydrology of tailings impoundments to determine how contaminants are released (Figure 9). This work should eventually yield more cost-effective waste management technology for managing mining and mineral processing wastes. Recent results include:

o Laboratory column leaching experiments on wastes from 19 different metal mines indicated that metal dissolution increased by 25 percent when the wastes were not saturated with water as compared to wastes that were submerged in water.
o Test results from one field site indicated that seasonal factors strongly influence the release of contaminants and that most contaminants are attenuated by the surrounding environment.
o A water quality data base containing information from several mine sites was completed. Statistical analysis of the data showed that differences in water chemistry are related to site-specific variables such as geology, climate, and mineralogy. This indicates that regulatory decisions for waste management need to be site specific.

The Bureau undertook a successful research program to develop a treatment technology for decontaminating wastes at the 25 battery-recycling sites on the National Priorities List. A leaching technique developed in the laboratory in FY 1989 was tested at the pilot level in FY 1990. EPA plans to fund a field demonstration in FY 1991, probably at an Ohio Superfund site.

The Bureau of Mines has undertaken twenty technical support efforts for EPA and three for other Bureaus within the Department of the Interior. Eleven of the EPA studies are at mines or primary mineral processing sites covering copper, lead, zinc, silver, and gold operations. Five have dealt with facilities contaminated by lead battery recycling and the other four have been treatment studies related to metals contamination at industrial facilities. The work for the Department of the Interior Bureaus has been concerned in two cases with past mining sites and in the other, a case of lead contamination of soil. The Bureau is also working with other Federal agencies to develop technologies and strategies as well as to coordinate the cleanup of hazardous wastes on Federal lands.

Research on handling wastes produced by the copper industry have involved completing bench-scale tests on removing arsenic from flue dusts and analyzing the nature of non-arsenical flue dusts. Scientists also initiated studies on other wastes generated at copper smelters to determine if they can be treated in an environmentally safe manner.

The Bureau completed research on a recycling technique that allows aluminum processors to use discarded potliners as anodes in the production process. Cooperative work with Northwest Aluminum Company resulted in commercial-scale demonstration of this technology at a plant in Dalles, Oregon. This technology could potentially reduce future cyanide contamination of soils and ground waters from spent potliners. Demonstrations of flame smelting technology for recovering marketable zinc and lead from steelmaking dust produced by electric arc furnaces were completed.

Subsidence research continued to address the major causes of property damage above active longwall mines and room-and-pillar mines from which pillars are removed. A subsidence prediction model was developed for the northern Appalachian coal region and modified for use in the southern coal region. The Bureau conducted studies to determine the effects of subsidence on building foundations that featured both conventional and modified designs. Subsidence can have an effect on the rates at which wells and aquifers are recharged with water. Wells and aquifers have been monitored to determine the recharge rates following subsidence. Water issues will continue to play an increasing role in the Bureau's subsidence research.

Proposed Work in FY 1991:

Research will emphasize the continued development of new technology to mitigate environmental damage from mining and mineral processing; decontamination of hazardous waste disposal sites; detoxification of metallurgical wastes; and defining the effects of mine subsidence.

Work on the environmental effects of hard rock mine waste and tailings disposal and the safe closure of mining operations will continue as a high priority effort. This research is driven by the critical need of the mineral industry and the regulatory authorities for technology to meet current and new State and Federal mining waste regulations. Basic research will focus on determining the mechanisms involved in the release of metals and other constituents from mining wastes. Studies on the fundamental interactions that occur within tailings impoundments and waste piles will help scientists develop new technology for controlling the release of contaminants. These studies will incorporate biotechnological, chemical, physio-chemical, and hydrological parameters in a multidisciplinary approach. Wastes from copper, lead and zinc, precious metals, iron ore, and the phosphate industry will be emphasized for they occur in large volumes and present the greatest environmental risks.

Other research will study the use of wastes as mining backfill and examine the special environmental problems associated with mining and mineral processing operations in the arctic regions of Alaska and the alpine areas of the Rocky Mountains. Scientists will identify methods for closing hardrock mines and reclaiming tailings and other mine wastes in these areas so that mined land can be used for other purposes in the future.

Research will continue to develop technology for removing heavy metals from, and reducing the volume of wastes generated by the metallurgical industries.

Bureau-developed technology for treating arsenic-bearing copper smelter flue dusts will be demonstrated for commercial acceptance. Research will continue on developing treatment technologies for non-arsenical copper smelter flue dusts. Additional research will address sludges and other wastes generated at copper smelters.

Environmental research on wastes from steel production will concentrate on dusts generated by basic oxygen furnaces. Laboratory studies will involve heating collected dusts and removing contaminants by selective volatilization, leaching, and other chemical techniques. Standard mineral dressing techniques will also be investigated for use in separating trace metals from steelmaking dusts.

Work will continue on developing technology for recovering toxic chromium from wastes generated at thousands of electroplating plants located around the country. This research could ultimately lead to the creation of centralized chrome recovery facilities that would treat wastes from near-by plants.

Subsidence research will place additional emphasis on water issues--preventing and mitigating damage to wells, streams, and aquifers. Scientists will define the hydrological phenomena that occur in areas affected by subsidence as a basis for evaluating potential control technologies. Researchers will also study geological and geomechanical factors that affect surface ground movements and determine how these movements affect water sources and surface structures.

Outyear Plans:

The Bureau anticipates that the proposed research will result in the development of technology for removing lead and other sulfide minerals from tailings at midwest lead mining sites. Demonstration of methods for recovering the lead contained in soils at former battery-recycling operations will reduce the number of such sites remaining on the National Priorities List. Field tests of technology developed to remove arsenic from copper smelter flue dusts will allow scientists to determine the technical and economic feasibility of this technique. Subsidence research will produce improved methods for predicting subsidence throughout the country and a better understanding of the interactions that occur between the ground and surface structures. Understanding should help researchers identify ways to prevent catastrophic damage to structures located above subsiding coal mines.

DECREASE FOR FY 1991:

(Dollar Amounts in Thousands)

		FY 1991 Base	FY 1991 Estimate	Change
Solid Waste Management and Subsidence	$	5,923	5,173	-750
	(FTE-T)	(82)	(76)	(-6)

The Bureau will decrease its effort in coal mine reclamation in the midwestern United States. A study of methods to eliminate soil contamination caused by metals processing will be brought to an orderly conclusion. Proposed research to address hydrologic effects of longwall subsidence will be reduced. Research support to State agencies on specific abandoned metal mine subsidence problems in urban areas will be reduced.

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ABANDONED MINED LAND RECLAMATION RESEARCH

OVERVIEW: The Bureau's Abandoned Mined Land (AML) reclamation research program addresses technical problems encountered in reclaiming abandoned coal mined lands, including coal refuse piles. It supports the nationwide abandoned mined land program being carried out by the States and the Office of Surface Mining Reclamation and Enforcement (OSMRE). The latest inventory on abandoned coal mined land identified 9,578 high-priority problem areas nationwide--areas which will cost an estimated $5.8 billion to reclaim.

OSMRE began a formal reclamation research program in FY 1985; that work was transferred to the Bureau in FY 1987. A key criterion in project selection is the requirement that the technology be innovative, and suitable for use nationwide. Research results will help user agencies to improve reclamation techniques and develop more cost-efficient programs. Funded projects focus on innovative technologies with nationwide application.

PROBLEM: Research is needed to solve technical problems related to the reclamation of the Nation's abandoned coal mined lands. State reclamation agencies and OSMRE have only limited funds to reclaim thousands of areas. The development of new reclamation methods will make state-of-the-art, cost-efficient systems available to coal mining states with abandoned mined land.

PROGRAM:

Progress in FY 1990 and Prior Years:

In accordance with a Congressional mandate including in the FY 1987 Appropriations Bill, projects funded under this program were selected by a review panel composed of nine members, five of which are from outside the Bureau. Selections have been made based on research priorities established by the National Academy of Sciences and those perceived by the panel members. A number of problems have been addressed (see Table 1). The Bureau has closely coordinated contract research performed under this program and related in-house work. Preliminary evaluations of the research conducted indicated that the program has successfully met its goals and objectives. Significant results have been achieved, particularly in the areas of acid mine drainage and subsidence.

Table 1

AML FUNDING BY TECHNICAL CATEGORIES
FY 85 - FY 90

Category	Funding	Percent of Total
Subsidence	$ 3,723,914	37
Water Quality/Acid Mine Drainage	2,707,468	27
Mine Fires	2,002,423	20
Revegetation/Soils	419,633	4
Blasting	414,759	4
Mine Waste and Slope Stability	347,000	4
Data Bases	302,231	3
Shaft and Adit Closure	131,000	1
TOTAL	10,048,428	100

Proposed Work in FY 1991: Research will continue in acid mine drainage, subsidence, and other technical areas which the review panel designated as high priority. Emphasis will be placed on projects that can reduce costs to state and Federal regulatory authorities. Examples are: improved equipment and methods for preventing subsidence by filling in closed mine voids; advanced geophysical techniques to be used with conventional drilling to define site conditions; more efficient techniques for treating acid mine drainage; and methods and procedures for controlling mine fires.

Outyear Plans:

A Congressionally-mandated review panel selects research projects annually from proposals received in response to a solicitation describing the highest research priorities. The review panel evaluates the results of completed research as well as the progress of ongoing work to recommend technology transfer activities and establish research priorities for the coming year. This process has been quite successful thus far, and the Bureau anticipates that in future years other Federal agencies, States, and their contractors will use the results of this research to provide more efficient and economic reclamation of abandoned mined lands.

No increase in funds is requested for 1991.

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NATIONAL MINE LAND RECLAMATION CENTER

OVERVIEW: In FY 1988, Congress established the National Mine Land Reclamation Center (NMLRC) to provide additional research on the surface effects of mining. Congress directed that research would initially be limited to abandoned coal-mined lands. Despite the efforts of Federal and state governments to reclaim these lands, much remains to be done. Many of the problems involved in reclaiming mined lands are regional in nature. Recognizing this, the NMLRC established regional centers for the eastern, midwestern, and western parts of the country. A National Center acts as the coordinator for all research.

PROBLEM: Because of the regional nature of reclamation problems, the NMLRC has advisory councils that assist the regional centers in the identification and prioritization of regional research programs. Examples of priority research problems addressed by the NMLRC include acid mine drainage, surface and ground water protection, revegetation, fires on abandoned coal lands, subsidence, and erosion and sediment control. Other Bureau programs focus on technologies that have nationwide applications to the solution of reclamation problems.

PROGRAM:

Progress in FY 1990 and Prior Years:

Congress has continued to fund the NMLRC since its establishment in FY 1988. West Virginia University which was designated as the lead university, entered into a cooperative agreement with the Bureau to implement the program. It, in turn, has cooperative agreements with affiliate universities in the east, midwest, and west (Pennsylvania State University, Southern Illinois University at Carbondale, and the University of North Dakota/North Dakota State University). National and regional advisory councils have been appointed and are advising the universities. National research priorities include: prevention and treatment of acid mine drainage; determining the impact of abandoned mines on groundwater; subsidence prediction and control; remining as a method of reclamation; soil reconstruction and revegetation; erosion and sediment control; disposal and use of coal mining and coal processing wastes; mine fires; and cost/benefit guidelines for reclamation projects on abandoned mined lands.

Proposed work in FY 1991:

Since the States and industry are the major beneficiaries of this work, Federal funding for this research is not appropriate. Therefore, no Federal funding is requested for this effort in FY 1991. Much research is already underway in the several technical disciplines involved in the mine land reclamation area under other programs.

Outyear Plans: None

DECREASE FOR FY 1991:

(Dollar Amounts in Thousands)

		FY 1991 Base	FY 1991 Estimate	Change
National Mine Land Reclamation Center	$	1,500	—	-1,500
	(FTE-T)	(—)	(—)	(—)

No funding for the National Mine Land Reclamation Center (NMLRC) is requested for FY 1991. The States and industry are the major beneficiaries of the results of the research to be conducted and, as such, should be responsible for the support of the program.

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SUBACTIVITY DECREASES FOR FY 1991

(Dollar Amounts in Thousands)

		FY 1991 Base	FY 1991 Estimate	Decreases
Environmental Technology				
Control of Mine Drainage and Liquid Wastes	$	5,657	3,907	-1,750
	(FTE-T)	(77)	(65)	(-12)
Solid Waste Management and Subsidence	$	5,923	5,173	-750
	(FTE-T)	(82)	(76)	(-6)
Abandoned Mined Land Reclamation Research	$	2,002	2,002	---
	(FTE-T)	(17)	(17)	(---)
National Mined Land Reclamation Center	$	1,500	---	-1,500
	(FTE-T)	(---)	(---)	(---)

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OBJECT CLASSIFICATION DISTRIBUTION

The object class detail for the $4,000,000 decrease for the Environmental Technology subactivity is as follows:

	FTE-T	Amount
Personnel Compensation	(-18)	$ -422,000
Personnel Benefits		-66,000
Other services		-2,032,000
Grants		-1,480,000
Total		$ -4,000,000

ACTIVITY SUMMARY

Activity: MINERAL INSTITUTES

(Dollars in thousands)

Subactivity	1989 Actual	1990 Approp Enacted	1990 Adjusted Approp	1991 Base	1991 Estimate	Inc (+) Dec (-) from Base
Mineral Institutes	10,012	10,012	9,879	10,012	4,250	-5,762

Justification of Program and Performance

ACTIVITY/SUBACTIVITY OVERVIEW

ACTIVITY: **MINERAL INSTITUTES**
SUBACTIVITY: **MINERAL INSTITUTES**

(Dollar Amounts in Thousands)

Program Elements		1990 Enacted To Date	1990 Adjusted Approp	1991 Base	1991 Estimate	Inc. (+) Dec. (-) From Base
Allotment Grants	$	4,425	4,366	4,425	—	-4,425
	(FTE-T)	(—)	(—)	(--)	(—)	(—)
Research Grants	$	5,254	5,184	5,254	4,000	-1,254
	(FTE-T)	(---)	(---)	(---)	(---)	(---)
Administration	$	333	329	333	250	-83
	(FTE-T)	(2)	(2)	(2)	(2)	(---)
Total Requirements	$	10,012	9,879	10,012	4,250	-5,762
	(FTE-T)	(2)	(2)	(2)	(2)	(—)

Impact of Public Law 99-177

	1990 Enacted To Date	PL 100-119 B.A. Cancellation	1990 Adjusted Approp.
Mineral Institutes	10,012	-133	9,879

As a result of the $133,000 P.L. 99-177 reduction, allotment grants will be reduced from approximately $138,000 per institute to $136,000. Research grants will have $70,000 less available for distribution to the institutes and there will be $4,000 less available for the administration of the program.

MINERAL INSTITUTES

The Mineral Institute program was initiated to provide seed money to encourage the development of mineral-related Government/industry/university research and graduate education programs at selected State colleges and universities which would also provide opportunity for the training of mining and mineral engineers and scientists. The States have responded and the programs are now in place. Mineral institute funds provide only a part of the money needed to support these programs; the majority comes from non-Federal sources.

Under the Mineral Institute program allotment grants are made to 32 designated colleges and universities to support basic research and education in the mineral sciences and engineering. In order to encourage State participation, these allotment grants must be matched by two non-Federal dollars for each Federal dollar.

The 32 mineral institutes are:

1. University of Alabama
2. University of Alaska - Fairbanks
3. University of Arizona
4. University of California - Berkeley
5. Colorado School of Mines
6. Georgia Institute of Technology
7. University of Idaho
8. Southern Illinois University
9. Purdue University
10. Iowa State University
11. University of Kentucky
12. Louisiana State University
13. Massachusetts Institute of Technology and State University
14. Michigan Technological University
15. University of Minnesota
16. University of Mississippi
17. University of Missouri - Rolla
18. Montana College of Mineral Science and Technology.
19. University of Nevada - Reno
20. New Mexico Institute of Mining and Technology
21. Columbia University
22. University of North Dakota
23. Ohio State University
24. University of Oklahoma
25. Pennsylvania State University
26. South Dakota School of Mines
27. University of Texas
28. University of Utah
29. Virginia Polytechnic Institute and State University
30. University of Washington
31. West Virginia University
32. University of Wyoming

In addition, competitive research grants are made in five generic mineral technology areas. These grants support research of broad applicability to the mineral industry. Grants in a sixth generic mineral technology area, Respirable Dust, are funded by the Health, Safety and Mining Technology program. All 32 mineral institutes compete for awards. The generic areas and institutions currently conducting research are:

Generic Program	Generic Center	Affiliates
Mine Systems Design and Ground Control	Virginia Polytechnic Institute and State University	University of Alabama University of Alaska University of Arizona Colorado School of Mines University of Idaho Southern Illinois University University of Kentucky University of Nevada-Reno University of Utah
Comminution	University of Utah	University of California-Berkeley Michigan Technological University Pennsylvania State University Virginia Polytechnic Institute and State University
Mineral Industry Waste Treatment and Recovery	University of Nevada-Reno	University of Alabama University of Arizona University of California-Berkeley Colorado School of Mines University of Minnesota Montana College of Mineral Science and Technology New Mexico Institute of Mining and Technology University of Oklahoma

Pyrometallurgy	University of Missouri-Rolla	Colorado School of Mines Columbia University Massachusetts Institute of Technology Ohio State University University of Utah University of Kentucky
Marine Minerals	University of Mississippi	University of Hawaii
Respirable Dust (Funded under Health, Safety and Mining Technology)	Pennsylvania State University and West Virginia University	Massachusetts Institute of Technology Michigan Technological University University of Minnesota

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AUTHORIZATION: 30 U.S.C. as extended through 1994 by Public Law 98-409, as amended by Public Law 100-483.
30 U.S.C. 1222 as extended through 1994 by Public Law 98-409, as amended by Public Law 100-483.
30 U.S.C. 1226(d)(1) as extended through 1994 by Public Law 98-409, as amended by Public Law 100-483.

OBJECTIVE:

- o Encourage graduate-level research on national and regional problems in mineral engineering at colleges and universities and train qualified mineral scientists and engineers.
- o Encourage Government/industry/university research on national and regional problems in areas of broad applicability across the minerals industry and facilitate industry-State-Federal cooperation in solving mineral engineering problems.
- o Ensure efficient administration of Government/industry/university research on national and regional problems of highest priority across the minerals industry.

RELATED BUREAU OF MINES ACTIVITIES: In the pursuit of its mission, the Bureau of Mines contracts with universities to obtain information or investigate mineral-related problems. These contracts supplement and further support mineral engineering research at the institutions involved. Research in the mineral technology areas is coordinated with ongoing research at the Bureau of Mines and with that in industry through research councils made up of prominent scientists and engineers from industry, academe, and the Bureau of Mines. Funds appropriated since FY 1985 to the Health, Safety and Mining Technology program are being used to support the Generic Mineral Technology Center in Respirable Dust. The technical staff in the Washington Office and Finance and Management provide similar aid in selecting and monitoring Bureau of Mines internal research.

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ALLOTMENT GRANTS

OVERVIEW: Funds are used to provide annual allotment grants to each of the designated 32 colleges and universities to help support mineral related research and education. Pursuant to Public Law 98-409, as amended, grants made in FY 1988 and FY 1989 were matched 2-to-1 by non-Federal funding. These funds may be used for scholarships and fellowships; purchase of scientific equipment and books; salaries of visiting scholars, professors, technicians and assistants; travel by faculty and/or students to professional meetings, mine sites, or field trips; cooperative efforts with mineral-related State agencies or academic institutions on mineral problems of mutual interest; and scientific and engineering studies of mineral problems of importance to the State or region. Application for allotment grants must meet the standards and criteria as set forth by the Advisory Committee on Mining and Minerals Resources Research before they are awarded.

PROGRAM:

Progress in FY 1990 and prior years:

In FY 1988 and FY 1989, allotment grants of $138,000 each (matched on a 2-to-1 basis by non-Federal funds) were made to 32 colleges and universities to support programs of mineral-related research and education. In FY 1990, new allotment grants (matched on a 2-to-1 basis) will be made to each of the 32 mineral institutes.

Proposed Work in FY 1991:

Funds made from grants in FY 1990 will be available to support mineral institute activities through the 1990-91 academic year. No new grants are proposed for the 1991-92 academic year because State and private resources are adequate to continue the program at an appropriate level.

DECREASE FOR FY 1991

(Dollars in Thousands)

		FY 1991 Base	FY 1991 Estimate	Change
Allotment Grants	$	4,425	—	-4,425
	(FTE-T)	(—)	(—)	(—)

Allotment grants for the mineral institutes program will be terminated. No new grant funds are proposed for the 1991-92 academic year because state and private resources are adequate to continue the program at the appropriate level. Federal funding for these grants does not have the priority that it had a decade ago. Since the primary beneficiaries of these grants are the institutes, further support should be provided by the States or industry if deemed necessary.

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RESEARCH GRANTS

OVERVIEW: Funds are awarded to further support research in five generic areas of mineral technology: pyrometallurgy, comminution, mine systems design and ground control, mineral industry waste treatment and recovery, and marine technology. Proposals from all 32 mineral institutes are considered.

PROGRAM:

Progress in FY 1990 and Prior Years:

After analyses by the Bureau of Mines, research grants of approximately $15.9 million in respirable dust and $29.6 million divided among the remaining five generic technology areas have been made through 1989. In FY 1989, $5.3 million was awarded for 138 projects continuing and new projects as follows:

- o $1.2 million for 34 projects in mine systems design
- o $0.8 million for 22 projects in communication
- o $1.0 million for 28 projects in mineral industry waste treatment and recovery
- o $1.1 million for 25 projects in pyrometallurgy
- o $1.2 million for 29 projects in marine minerals technology

Respirable dust grants, funded under the Health, Safety and Mining Technology subactivity totaled $23.4 million and covered 44 projects in FY 1989. Awards for highest priority research problems in FY 1990 are being selected on the basis of competition among all 32 of the mineral institutes in the generic technology areas. The funds will be made available to the institutes during the latter part of the fiscal year as institutes prepare and submit continuing and new projects proposals for review and acceptance by the Advisory Committee on Mining and Mineral Resources Research.

Proposed Work in FY 1991:

Research with funds awarded in previous fiscal years will continue in the five generic areas of research. This request will provide for continued high priority research projects at the generic research centers. Specific projects proposals will not be known until the availability of funds are known by the generic research centers.

DECREASE FOR FY 1991

(Dollar Amounts in Thousands)

		FY 1991 Base	FY 1991 Estimate	Change
Research Grants	$	5,254	4,000	-1,254
	(FTE-T)	(—)	(—)	(—)

Grants awarded in FY 1990 will continue to support research efforts in the five generic mineral technology areas (mine systems design and ground control; comminution; mineral industry waste treatment and recovery; pyrometallurgy; marine minerals). FY 1991 Federal grant funds, requested here, will provide a more than adequate adjunct to FY 1990 funding for new and continued high priority mineral technology research at the generic research centers. Beneficiaries of the results of this research are not only the States and industry, but the nation as a whole.

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ADMINISTRATION

OVERVIEW: The Office of Mineral Institutes monitors research projects in place and provides for the selection of new projects with the aid of research councils consisting of experts from industry, academe and Government. This office also provides support for the deliberations of the Advisory Committee on Mining and Mineral Resources Research, mandated by Public Law 98-409, as amended, which makes recommendations to the Secretary on mining and mineral resources research and prepares an annual national plan for research in mining and mineral resources to be submitted to the Secretary, the President, and the Congress.

PROGRAM:

Progress in FY 1990 and Prior Years:

The review of proposals and the evaluation and monitoring of ongoing mineral institutes research and other activities is continuing. The Advisory Committee on Mining and Mineral Resources Research meets at least annually to provide advice on the conduct of the program, to approve the making of grants, and to prepare the annual national plan for research in mining mineral resources.

Proposed Work in FY 1991:

The review of new proposals and the monitoring of ongoing research projects will continue as will support for the Advisory Committee on Mining and Mineral Resources Research in its tasks.

DECREASE FOR FY 1991

(Dollar Amounts in Thousands)

		FY 1991 Base	FY 1991 Estimate	Change
Administration	$	333	250	-83
	(FTE-T)	(2)	(2)	(—)

This amount of funding will provide appropriate support for reviewing new grant proposals and monitoring grants not yet completed and for the activities of the Research Committee on Mining and Mineral Resources Research.

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ACTIVITY DECREASE FOR FY 1991

The decreases for Mineral Institutes are in three program elements:

(Dollar Amounts in Thousands)

		FY 1991 Base	FY 1991 Estimate	Change
Allotment Grants	$	4,425	—	-4,425
	(FTE-T)	(—)	(—)	(—)
Research Grants	$	5,254	4,000	-1,254
	(FTE-T)	(—)	(—)	(—)
Administration	$	333	250	-83
	(FTE-T)	(2)	(2)	(—)

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OBJECT CLASSIFICATION DISTRIBUTION

The object class detail for the $5,762,000 decrease for the Mineral Institutes activity is as follows:

	Amount
Other services	$ -83,000
Grants	-5,679,000
Total	$ -5,762,000

ACTIVITY SUMMARY

Activity: GENERAL ADMINISTRATION

(Dollars in thousands)

Subactivity	1989 Actual	1990 Approp Enacted	1990 Adjusted Approp	1991 Base	1991 Estimate	Inc (+) Dec (-) from Base
General Administration	22,727	31,919	31,496	34,878	27,378	-7,500

Justification of Program and Performance

ACTIVITY/SUBACTIVITY OVERVIEW

Activity: GENERAL ADMINISTRATION

SUBACTIVITY: GENERAL ADMINISTRATION

(Dollar Amounts in Thousands)

Program Elements		1990 Enacted To Date	1990 Adjusted Approp	1991 Base	1991 Estimate	Inc. (+) Dec. (-) From Base
Executive Direction	$	2,143	2,115	2,148	3,048	+900
	(FTE-T)	(35)	(35)	(35)	(36)	(+1)
Office of the Director		450	444	451	451	—
Senior Advisory Staff		250	247	251	251	—
Congressional Liaison		127	125	127	127	—
Public Information		566	559	567	1,467	+900
Equal Employment Opportunity		531	524	532	532	—
Regulatory Projects Coordination		219	216	220	220	—
Finance and Management	$	21,276	20,994	24,230	24,330	+100
	(FTE-T)	(270)	(270)	(269)	(269)	(—)
Finance and Management Direction		391	386	392	392	—
Personnel		1,789	1,765	1,591	1,591	—
Finance		1,928	1,902	1,974	1,974	—
Budget		315	311	316	316	—
Organization and Management		569	561	571	571	—
Automatic Data Processing		4,829	4,765	2,342	2,342	—
Procurement		1,798	1,774	1,805	1,805	—
Property		1,615	1,594	1,620	1,620	—
General Services		7,542	7,443	13,119	13,119	—
Research Center Maintenance		500	493	500	600	+100
ROBCO Settlement	$	8,500	8,387	8,500	—	-8,500
	(FTE-T)	(—)	(—)	(—)	(—)	(—)
Total Requirements	$	31,919	31,496	34,878	27,378	-7,500
	(FTE-T)	(305)	(305)	(304)	(305)	(+1)

Impact of Public Law 99-177

	1990 Enacted To Date	PL 100-119 B.A. Cancellation	1990 Adjusted Approp.
General Administration	31,919	-423	31,496

As a result of the $423,000 P.L. 99-177 reduction, travel and training will be reduced, and equipment purchases will be deferred. The amount paid to the Environmental Protection Agency (EPA) for the Robinson Brick Company (ROBCO) cleanup will be reduced.

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GENERAL ADMINISTRATION

AUTHORIZATION: 30 U.S.C. 1-11

OBJECTIVE:

- o Provide leadership, direction, policy and program guidance, and management coordination for all Bureau programs to meet Congressionally-mandated responsibilities in research and development and data gathering and analysis.

- o Provide administrative and management support services that assist in carrying out Bureau missions, monitoring Bureau programs, and managing the administrative policies and programs of the Bureau.

PROGRAM: General Administration includes two main elements: Executive Direction, and Finance and Management. Executive Direction includes the Director of the Bureau and associated staff advisors and offices. Finance and Management includes the administrative functions of personnel, budget, finance, organization and management, automatic data processing, procurement, and property. These two elements provide leadership and administrative support for the Bureau's information and analysis and research programs.

Executive Direction consists of the following components:

Office of the Director. The Director reports to the Assistant Secretary - Water and Science and is responsible for overall guidance, supervision, and direction of the Bureau of Mines. The Director oversees program objectives, organizational structure, budget, and selection of personnel. The Deputy Director, Associate Directors, and various staff offices assist the Director in carrying out these responsibilities.

Senior Advisory Staff. This staff advises and consults with the Director on an extensive range of scientific, engineering, and technical matters related to Bureau responsibilities. Also, the Chief Staff Officer directs the Department's Emergency Minerals Administration and advises senior Federal officials on the Defense Production and Stock Piling Acts.

Congressional Liaison. This Office interprets and presents the Bureau's technical and information programs to individual members and committees of Congress. The office works closely with the Office of the Secretary regarding congressional contacts.

Public Information. The Office of Public Information develops and directs programs through which the Bureau disseminates information; establishes publication policy and monitors conformance to it; reviews all manuscripts proposed for presentation, publication, or open-filing; supervises headquarters graphics services; and replies to press and public inquiries. The office supports Bureau programs and the Director's office by:

- o Issuing a variety of publications that inform the general public of the importance of the minerals industry to society.
- o Developing exhibits and other visual presentations concerning Bureau programs and activities.
- o Developing and distributing movies and videotapes to general audiences concerning specific Bureau programs and the domestic mineral industry.
- o Reviewing Bureau manuscripts and contractors' reports for quality and conformance to official policy.
- o Responding to more than 4,000 public and press inquiries annually.
- o Directs the Bureau's Stewardship initiative.

Equal Employment Opportunity. The Office of Equal Employment Opportunity (EEO) is authorized by various laws, including Title VII of the Civil Rights Act of 1964, and four Executive Orders. Its responsibilities include implementation of affirmative action; evaluation of EEO programs; processing, adjudication, and investigation of complaints; and development of special emphasis programs.

Regulatory Projects Coordination. The Office of Regulatory Projects Coordination monitors, identifies and assesses current and emerging regulatory issues and regulations that could affect the mineral industries. It facilitates Bureau interaction on these issues with other Federal agencies, State governments, Congress, and the mineral industries.

Finance and Management consists of the following components:

Finance and Management Direction. The Associate Director - Finance and Management provides overall direction and management for the Bureau's administrative support program.

Personnel. The Division of Personnel develops, recommends, and implements personnel management policies for the Bureau. It provides personnel advice and services to headquarters and field organizations, and studies personnel issues that affect organizational effectiveness, as well as evaluating the effectiveness of human resource management in the Bureau.

Finance. The Division of Finance develops, recommends, and implements financial management policies, procedures, and standards. The Division produces financial reports for submission to the Department of the Interior, the Office of Management and Budget and the Department of the Treasury and provides a broad range of financial services to the Bureau's headquarters and field offices. The Division will continue to improve and enhance the Federal Financial System, the Departmentwide accounting system.

Budget. The Budget Division analyzes resource requirements, prepares the Bureau's budget, and oversees its implementation. It provides advice and recommendations on the allocation of funds and evaluates and assesses the use of budgetary resources.

Organization and Management. The Division of Organization and Management monitors and reviews the work, functions, and organizations of the Bureau to ensure the efficient and effective accomplishment of its mission and goals. It conducts studies to determine how well Bureau organizations use their allotted resources and develops and implements policies, programs, and procedures associated with safety, environmental health, internal controls, audit follow-up, and personnel and document security in the Bureau.

Automatic Data Processing. The Division of Automatic Data Processing provides data processing services to support management and administrative operations, and minerals information systems. The Division evaluates Bureau automatic data processing activities; administers a security program for safeguarding automatic data processing materials; and oversees the Bureau's purchase and conversion to minicomputers to meet its internal data processing needs. The Division also directs the Bureau's Information Management program which includes strategic planning, budget formulation, and program assessment. Through internal analyses, it advises management and individual activities on potential improvements in data processing and telecommunication that can help meet program goals.

Procurement. The Division of Procurement provides major acquisition support services to all Bureau programs, including solicitation, negotiation, award, and administration of contracts. The Division directs efforts to meet goals for socioeconomic programs established for such groups as small, disadvantaged, and labor surplus area businesses. The Division also resolves contract disputes and works with the Office of the Solicitor to defend the Bureau against protests, appeals, or court actions arising out of procurement matters.

Property. The Property and General Services Division recommends, develops, and implements policies and procedures for real property, personal property, energy management, telecommunications management, motor vehicle management, mail management, space management, and physical security. It reviews and approves plans and specifications for alteration and construction of buildings; determines standards for space and furnishings; manages and controls imprest fund operations; processes applications for inventions and patents; maintains liaison with the General Services Administration (GSA) on all appropriate matters; handles Tort Claims; provides Headquarters with library, mail, and correspondence control services; manages automated systems for controlling personal and real property and Government property in the hands of contractors; prints, reproduces, and distributes various Bureau publications; and works with the Government Printing Office to meet Bureau printing requirements.

General Services. The Property and General Services Division also manages the following bureauwide and Headquarters services:

- o Postage and telephones.
- o Unemployment and employee compensation payments.
- o Payments to the Bureau of Reclamation for PAY/PERS and payroll operations.
- o Payments to the GSA for space rental bureauwide and alterations to Bureau Headquarters space.
- o Payments to the Department of the Interior for services provided through the Office of the Secretary's Working Capital Fund.
- o Headquarters mail and messenger, duplicating and distribution, and other miscellaneous support services.
- o Headquarters scheduled relocation.

The helium program is under the direction of Finance and Management because the broader issues involved in the program are budgetary and financial in nature. Resources requirements are identified in the helium Fund section.

The ROBCO settlement has been included under the General Administration activity since FY 1989. In that fiscal year, the Bureau requested $3 million to pay the EPA for what was expected to be a one-time cost of cleanup of radioactive waste generated over 70 years ago by the National Radium Institute. As the EPA proceeded with the cleanup, it found that contaminates had spread through the soil. This produced much larger quantities of contaminated materials than originally estimated. With this discovery, the Bureau requested an increase of $7.5 million in FY 1990 to repay the EPA's Superfund. Since the Bureau's share of the cleanup cost has not been finally determined, the Administration decided to make no request for funding in FY 1991. It is anticipated that the final cost will be known in FY 1993; therefore, $14.0 million is included in the FY 1993 outyear projections.

DECREASE FOR FY 1991

(Dollars in Thousands)

		FY 1991 Base	FY 1991 Estimate	Change
Executive Direction	$	2,148	3,048	+900
	(FTE-T)	(35)	(36)	(+1)
Finance and Management	$	24,230	24,330	+100
	(FTE-T)	(269)	(269)	(---)
ROBCO Settlement	$	8,500	(---)	-8,500

In support of the Secretary's Stewardship initiative, the Bureau will devote $1 million to enhancing its programs in Take Pride in America, excellence in education, and women and minorities.

Take Pride in America. The Department encourages volunteer stewardship in a variety of ways, including the national Take Pride in America campaign. Take Pride in America reaches out to million of Americans through its national awards program, grassroots activities, and public service announcements. The campaign's message is simple: American's natural resources belong to all of us, and we have a responsibility to leave them in better condition for future generations. For the Bureau of Mines a total of $100 thousand is being proposed for Take Pride in America, an increase of $100 thousand over the base.

Excellence in Education. Interior supports the President's goal to raising the standards of education in American. In addition Indian education programs, the Department has a variety of non-Indian education initiatives that include activities in support of elementary, secondary and post secondary school programs as well as programs for the general public regarding the Nation's natural resources. For the Bureau of Mines a total of $500 thousand is being proposed for the excellence in education efforts, an increase of $500 thousand over the base. The types of activities carried out by the Bureau of Mines include the following: Oversee the development of a minerals education curriculum for elementary schools. The curriculum will help students (1) discover the nature of mineral resources and their importance in the origin and development of society, (2) become aware of the role the mineral resources industry plays in providing for our advanced technology, and (3) develop an appreciation and concern for the development and conversation of these nonrenewable natural resources. The curriculum will be designed in conjunction with a volunteer panel of mineral experts and educators.

Women and Minorities. Interior's goal is to involve women and minorities as employees, especially at management levels, and program participants in an effort to reach beyond minimum equal opportunity requirements. Interior bureaus are continually seeking ways to enhance the recruitment, training, and advancement within the Department of women and minorities, particularly in such critical professional areas as engineering, science, accounting and computer programming. For the Bureau of Mines a total of $300 thousand is being proposed for women and minorities efforts, an increase of $300 thousand over the base. The types of activities carried out by the Bureau of Mines include the following: (1) establish a direct employment program patterned on the U.S. Geological Survey's Minority Participation in the Earth Science Program, (2) Develop new career education materials targeted for women, minorities, and the physically challenged.

An increase of $100 thousand is being requested for Research Center maintenance projects to meet some critical needs in the removal of asbestos at various centers. During FY 1990, an intensive effort was conducted to eradicated this safety hazard. The initial survey identified existing asbestos removal requirements.

The Bureau is not requesting any funding to repay the Superfund for the cleanup of the ROBCO site in Denver, Colorado. The Bureau plans to ask for an appropriation in the year when the total cost of the cleanup project is known. This represents a decrease of $8.5 million from the amount appropriated in FY 1990.

* * * * * *

OBJECT CLASSIFICATION DISTRIBUTION

The object class detail for the $7,500,000 decrease in for General Administration is:

	FTE-T	Amount
Personnel compensation	(+1)	$ 33,000
Personnel benefits		6,000
Travel and transportation of persons		50,000
Transportation of things		20,000
Printing		350,000
Other services		-8,019,000
Supplies and materials		50,000
Equipment		10,000
Total		$ -7,500,000

DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
Summary of Requirements by Object Class

(Dollar amounts in thousands)

Appropriation: Mines and Minerals

Object Class		1991 Base FTE	1991 Base Amount	1991 Estimate FTE	1991 Estimate Amount	Inc. /(Dec.) FTE	Inc. /(Dec.) Amount
11.	Personnel compensation:						
11.1	Full-time permanent	1,930	73,735	1,832	71,390	(98)	(2,345)
11.3	Other than full-time permanent	147	2,325	140	2,236	(7)	(89)
11.5	Other personnel compensation	...	791	...	765	...	(26)
11.9	Total personnel compensation	2,077	76,851	1,972	74,391	(105)	(2,460)
	Other Objects						
12.1	Personnel benefits: Civilian		15,158		14,773		(385)
21.0	Travel and transportation of persons		3,392		3,642		0 250
22.0	Transportation of things		1,012		1,050		38
23.1	Rental payments to GSA		8,073		8,073		0
23.3	Communications, utilities, and miscellaneous charges		4,183		4,683		500
24.0	Printing and reproduction		871		1,471		600
25.0	Other services		43,545		19,484		(24,061)
26.0	Supplies and materials		4,507		4,707		200
31.0	Equipment		9,541		10,561		1,020
32.0	Lands and structures		493		600		107
41.0	Grants, subsidies, and contributions		13,349		4,000		(9,349)
42.0	Insurance claims and indemnities		2		2		
	Total requirements	2,077	180,977	1,972	147,437	(105)	(33,540)

DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
MINES AND MINERALS

Program and Financing (in thousands of dollars)

Identification code 14-0959-0-1-306		1989 act.	1990 est.	1991 est.
	Program by activities:			
	Direct program:			
	Information and Analysis			
00.01	Information and analysis	34,569	35,812	40,362
	Research			
00.02	Health, safety and mining technology	54,179	56,224	38,155
00.03	Minerals and materials science	25,075	29,299	26,210
00.04	Environmental technology	14,384	16,010	11,082
00.05	Mineral institutes	9,966	10,258	4,250
00.06	General administration	22,647	31,496	27,378
00.07	Facilities	2,075	...	...
00.91	Total, direct program	162,895	179,099	147,437
01.01	Reimbursable program	7,705	9,041	7,511
10.00	Total obligations	170,600	188,140	154,948
	Financing:			
11.00	Offsetting collections from Federal funds	(7,705)	(9,041)	(7,511)
17.00	Recovery of prior year obligations	(555)	...	...
21.40	Unobligated balance available, start of year	(7,640)	(4,311)	(3,655)
22.40	Unobligated balance transferred, net	...	(6,000)	...
24.40	Unobligated balance available, end of year	4,311	3,655	1,930
25.00	Unobligated balance lapsing	197	...	...
39.00	Budget authority	159,208	172,443	145,712
	Budget Authority:			
40.00	Appropriation	...	174,759	...
40.90	Reduction pursuant to P.L. 99-177	...	(2,316)	...
43.00	Appropriation (adjusted)	...	172,443	...
	Relation of obligations to outlays.			
71.00	Obligations incurred, net	162,895	179,099	147,437
72.40	Obligated balance, start of year	50,598	52,921	59,861
74.40	Obligated balance, end of year	(52,921)	(59,861)	(51,308)
77.00	Adjustments in expired accounts	(422)	...	...
78.00	Adjustments in unexpired accounts	(555)	...	...
90.00	Outlays	159,595	172,159	155,990

DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
MINES AND MINERALS

Object Classification (in thousands of dollars)

Identification code 14-0959-0-1-306	1989 act.	1990 est.	1991 est.
Direct obligations:			
Personnel compensation:			
11.1 Full-time permanent	69,944	72,809	71,390
11.3 Other than full-time permanent	2,194	2,296	2,236
11.5 Other personnel compensation	750	781	765
11.9 Total personnel compensation	72,888	75,886	74,391
12.1 Personnel benefits: Civilian	12,743	14,607	14,773
13.0 Benefits for former personnel	85	...	...
21.0 Travel and transportation of persons	3,417	3,688	3,642
22.0 Transportation of things	779	786	1,050
23.1 Rental payments to GSA	5,524	5,277	8,073
23.3 Communications, utilities, and miscellaneous charges	3,692	4,049	4,683
24.0 Printing and reproduction	1,037	871	1,471
25.0 Other services	30,529	43,965	19,484
26.0 Supplies and materials	5,224	5,290	4,707
31.0 Equipment	8,085	10,836	10,561
32.0 Lands and structures	2,458	493	600
41.0 Grants, subsidies, and contributions	16,432	13,349	4,000
42.0 Insurance claims and indemnities	2	2	2
99.0 Subtotal, direct obligations	162,895	179,099	147,437
99.0 Reimbursable obligations	7,705	9,041	7,511
99.9 Total obligations	170,600	188,140	154,948

Personnel Summary

Identification code 14-0959-0-1-306	1989 act.	1990 est.	1991 est.
Direct:			
Total number of full-time permanent positions	2,050	2,056	1,948
Total compensable workyears:			
Full-time equivalent employment	2,066	2,086	1,972
Full-time equivalent of overtime and holiday hours	9	9	9
Reimbursable			
Total number of full-time permanent positions	45	45	45
Total compensable workyears:			
Full-time equivalent employment	40	40	40

HELIUM FUND

Appropriation Summary Statement

The Helium Act Amendments of 1960, Public Law 86-777 (50 U.S.C. 167), authorized activities necessary to provide sufficient helium to meet the current and foreseeable future needs of essential government activities. The program includes production, conservation, sale, and distribution of helium and involves the management of helium program facilities and resources to:

(a) Provide helium to meet current demands of all Federal agencies.
(b) Provide helium to meet the foreseeable future helium requirements of essential Government programs.
(c) Conduct investigations and evaluations to improve the helium program.

The Administration proposes to amend the Helium Act Amendments of 1960, Public Law 86-777 (U.S.C. 167), to include selling the helium program assets, except for the helium inventory and to permit federal government users to purchase helium from the private sector. The Legislation to implement this proposal was transmitted to the Congress by the Secretary on March 22, 1989, and has been introduced as H.R. 2541. As part of this proposal, H.R. 2541 would cancel the outstanding debt which will remain after revenues from the sale of the assets have been applied to the debt. The estimate assumes an increase in the price of helium in the second half of FY 1990 and the sale of the Helium program assets, excluding the helium stockpile, in late FY 1991.

DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
-HELIUM FUND
Program and Financing (in thousands of dollars)

Identification code 14-4053-0-3-306	1989 act.	1990 est.	1991 est.
Program by activities:			
Operating program:			
00.01 Production and sales	14,829	15,031	15,563
00.02 Transmission and storage operations	1,030	1,189	1,103
00.03 Administrative and other expenses	1,202	975	993
00.91 Total operating program	17,061	17,195	17,659
01.01 Capital investment: Land, structures and equipment	756	1,750	1,500
10.00 Total obligations	17,817	18,945	19,159
Financing:			
Offsetting collections from:			
11.00 Federal funds	(13,800)	(16,684)	(20,624)
14.00 Non-Federal sources	(11,341)	(4,562)	(10,564)
17.00 Recovery of prior year obligations	(19)	0	0
21.98 Unobligated balance available, start of year: Fund balance	(19,379)	(22,722)	(23,071)
24.98 Unobligated balance available, end of year: Fund balance	22,722	23,071	23,071
27.00 Capital transfer to general fund	4,000	2,000	12,029
27.09 Sequestered collection	0	(48)	0
39.00 Budget authority	0	0	0
Relation of obligations to outlays:			
71.00 Obligations incurred, net	(7,324)	(2,301)	(12,029)
72.98 Obligated balance, start of year: Fund balance	(301)	590	(111)
74.98 Obligated balance, end of year: Fund balance	(590)	111	111
78.00 Adjustments in unexpired accounts	(19)	0	0
90.00 Outlays	(8,234)	(1,600)	(12,029)

Note: Sales to Federal Agencies by private (602) vendors who acquire their helium from the Bureau are shown as non-Federal collections in FY 1989 above, but as Federal in FY 1990 and FY 1991.

DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
HELIUM FUND
Revenue and Expense (in thousands of dollars)

	1989 act.	1990 est.*	1991 est.
Sales program:			
Revenue	25,127	21,241	31,183
Expense	(116,842)	(126,395)	(134,623)
Net operating income or loss (-), sales program	(91,715)	(105,154)	(103,440)
Nonoperating income or loss (-):			
Proceeds from sales of equipment	33	5	5
Net book value of assets sold	(50)	0	0
Net income or loss for the year	(91,732)	(105,149)	(103,435)

Financial Condition (in thousands of dollars)

	1988 act.	1989 act.	1990 est.	1991 est.
Assets:				
Selected assets:				
Fund balance with Treasury	19,078	23,312	22,959	22,959
Accounts receivable, net	2,747	3,040	3,040	3,040
Inventories	429,330	425,494	421,828	417,884
Real property and equipment, net	24,299	22,786	23,876	24,156
Other assets, net	2,233	2,418	2,418	2,418
Total assets	477,687	477,050	474,121	470,457
Liabilities:				
Selected liabilities:				
Accounts payable & funded accrued liabilities	1,034	486	486	486
Advances received	466	714	714	714
Unfunded liabilities:				
Accrued annual leave	504	643	643	643
Debt issued under borrowing authority:				
Borrowing from Treasury	251,650	251,650	251,650	251,650
Net worth	37,343	37,343	37,343	37,343
Interest due on net worth	72,765	78,954	87,857	83,995
Interest due on borrowing	655,720	740,786	833,827	935,590
Total liabilities	1,019,482	1,110,576	1,212,520	1,310,421
Government equity:				
Selected equities:				
Unexpended budget authority:				
Fund balance	19,379	22,722	23,071	23,071
Undelivered orders	946	1,728	1,728	1,728
Invested capital	(562,120)	(657,678)	(763,198)	(864,763)
Total Government equity	(541,795)	(633,228)	(738,399)	(839,964)

DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
HELIUM FUND
Financial Condition (in thousands of dollars) - Continued

	1989 act.	1990 est.	1991 est.
Analysis of changes in Government equity:			
Paid in capital:			
Opening balance	71,434	71,434	71,434
Transactions	0	0	0
Closing balance	71,434	71,434	71,434
Retained income:			
Opening balance	(613,229)	(704,961)	(810,293)
Transactions:			
Net operating income or loss (-)	(91,715)	(105,154)	(103,440)
Net non-operating income or loss (-)	(17)	5	5
Sequestered funds	0	(48)	
Closing balance	(704,961)	(810,110)	(913,728)
Total Government equity (end of year)	(633,527)	(738,676)	(842,294)

Object Classification (in thousands of dollars)

Identification code 14-4053-0-3-306		1989 act.	1990 est.	1991 est.
	Personnel compensation:			
11.1	Full-time permanent	6,924	7,174	7,440
11.3	Other than full-time permanent	216	224	232
11.5	Other personnel compensation	241	250	259
11.9	Total personnel compensation	7,381	7,648	7,931
12.1	Personnel benefits: Civilian	1,349	1,476	1,558
21.0	Travel and transportation of persons	139	137	173
22.0	Transportation of things	3,751	3,925	4,399
23.1	Rental payments to GSA	230	235	257
23.3	Communications, utilities, and misc.	406	374	401
24.0	Printing and reproduction	12	15	22
25.0	Other services	2,157	1,598	1,142
26.0	Supplies and materials	1,808	1,787	1,776
31.0	Equipment	543	1,654	1,500
32.0	Land and structures	41	96	0
99.9	Total obligations	17,817	18,945	19,159

Personnel Summary

Total number of full-time permanent positions	221	219	219
Total compensable workyears:			
Full-time equivalent employment	217	207	207
Full-time equivalent of overtime and holiday hours	7	7	7

DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
CONTRIBUTED FUNDS
Program and Performance

Funds contributed by States, countries, municipalities, and private sources are used to conduct research and investigations in such areas as the development of mineral resources and the health and safety of miners.

Program and Financing (in thousands of dollars)

Identification code 14-8287-0-7-306		1989 act.	1990 est.	1991 est.
	Program by activities:			
	Research:			
00.01	Health, safety and mining technology	294	334	321
00.02	Minerals and materials science......	89	172	168
00.03	Environmental technology............	77	183	201
10.00	Total obligations.................	460	689	690
	Financing:			
21.40	Unobligated balance available, start of year........................	(134)	(410)	(421)
24.40	Unobligated balance available, end of year.........................	410	421	431
60.00	Budget authority (appropriation) (permanent, indefinite)	736	700	700
	Relation of obligations to outlays:			
71.00	Obligations incurred, net...........	460	689	690
72.40	Obligated balance, start of year....	64	54	99
74.40	Obligated balance, end of year......	(54)	(99)	(99)
90.00	Outlays............................	470	644	690

Object Classification (in thousands of dollars)

Identification code 14-8287-0-7-306		1989 act.	1990 est.	1991 est.
	Personnel compensation:			
11.10	Full-time permanent	283	254	263
11.30	Other than full-time permanent......	9	8	8
11.90	Total personnel compensation......	292	262	271
12.1	Personnel benefits: Civilian.......	47	52	56
21.0	Travel and transportation of persons..........................	15	11	12
22.0	Transportation of things............	5	3	3
23.2	Communications, utilities, and other rent.........................	9	10	9
24.0	Printing and reproduction...........	1	1	
25.0	Other services	80	321	310
26 0	Supplies and materials..............	9	16	17
31.0	Equipment...........................	2	13	13
99.9	Total obligations	460	689	691

DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
CONTRIBUTED FUNDS

Identification code 14-8287-0-7-306	1989 act.	1990 est.	1991 est.
Personnel Summary			
Total number of full-time permanent positions	15	15	15
Total compensable workyears: Full-time equivalent employment	9	9	9

DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
Detail of Permanent Employment

	1989 Actual	1990 Estimate	1991 Estimate
Executive Level V	1	1	1
ES-6	1	1	1
ES-5	3	3	3
ES-4	11	11	11
ES-3			
ES-2			
ES-1			
subtotal	16	16	16
GS/GM-15	51	52	50
GS/GM-14	168	169	161
GS/GM-13	306	307	292
GS-12	415	416	396
GS-11	262	263	250
GS-10	23	23	21
GS-9	175	176	167
GS-8	49	49	46
GS-7	163	164	156
GS-6	113	113	108
GS-5	168	169	161
GS-4	89	89	85
GS-3	30	30	29
GS-2	9	9	8
GS-1	1	1	1
subtotal	2,022	2,030	1,931
Ungraded	164	164	154
Total permanent employment, end of year	2,202	2,210	2,101

DEPARTMENT OF THE INTERIOR
FY 1991 Budget for Consulting Services

Bureau: Bureau of Mines

Appropriation Account Title Type of Consulting Arrangement Program Requiring Services	FY 1991 Request ($thousands)	Discription of Services being Acquired
Mines and Minerals (14-0959-0-1-306)		
Personnel Appointments	44	Specialized skills needed on a limited basis.
Procurement Contracts	75	General Management and/or specific skills not currently available within the Bureau.
	119	

BUREAU OF MINES

Administrative Provisions

The Secretary is authorized to accept lands, buildings, equipment, and other contributions from public and private sources and to prosecute projects in cooperation with other agencies, Federal, State, or private: *Provided*, That the Bureau of Mines is authorized, during the current fiscal year, to sell directly or through any Government agency, including corporations, any metal or mineral product that may be manufactured in pilot plants operated by the Bureau of Mines, and the proceeds of such sales be covered into the Treasury as miscellaneous receipts. (Department of the Interior and Related Agencies Appropriations Act, 1990, as included in Public Law 101-121.)

(4)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUDGET JUSTIFICATIONS, F.Y. 1991

March 3, 1849

OFFICE OF SURFACE MINING
RECLAMATION AND ENFORCEMENT

NOTICE: These budget justifications are prepared for the Interior and Related Agencies Appropriations Subcommittees. Approval for release of the justifications prior to their printing in the public record of the Subcommittee hearings may be obtained through the Office of Budget of the Department of the Interior.

DEPARTMENT OF THE INTERIOR
Office of Surface Mining Reclamation and Enforcement
Budget Estimate, Fiscal Year 1991
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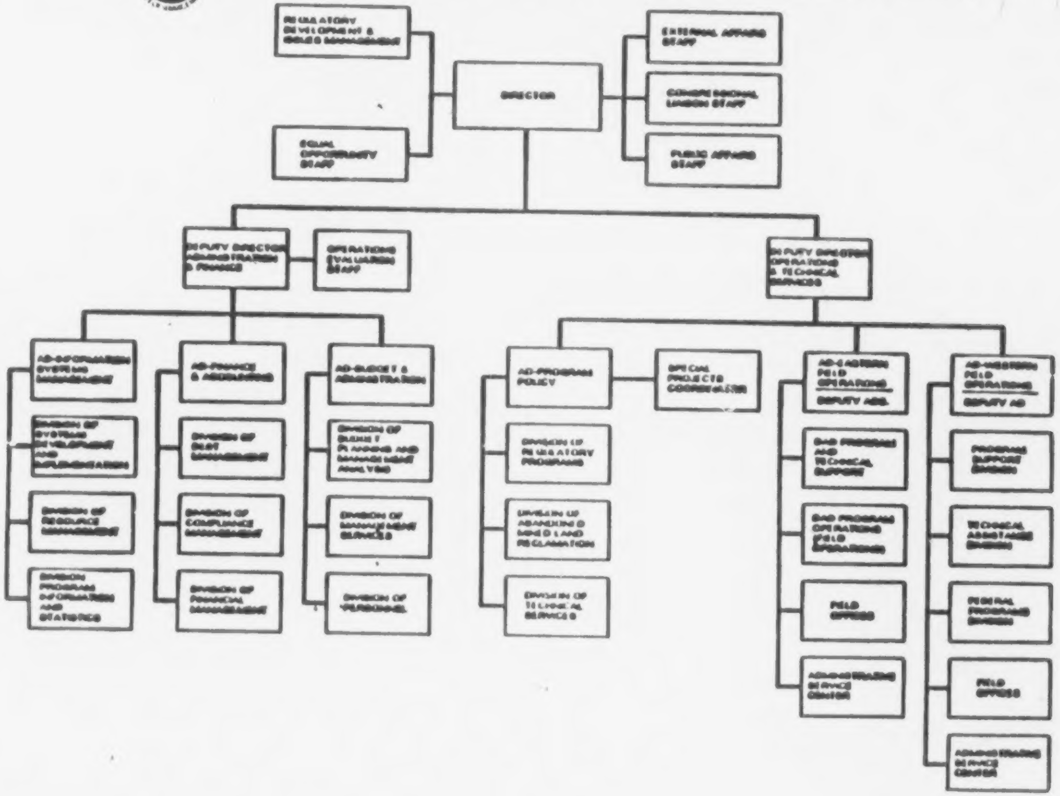
OFFICE OF SURFACE MINING RECLAMATION and ENFORCEMENT


REGULATORY DEVELOPMENT & ISSUES MANAGEMENT
EQUAL OPPORTUNITY STAFF
DIRECTOR
EXTERNAL AFFAIRS STAFF
CONGRESSIONAL LIAISON STAFF
PUBLIC AFFAIRS STAFF
DEPUTY DIRECTOR ADMINISTRATION & FINANCE
OPERATIONS EVALUATION STAFF
DEPUTY DIRECTOR OPERATIONS & TECHNICAL SERVICES
AD-INFORMATION SYSTEMS MANAGEMENT
DIVISION OF SYSTEMS DEVELOPMENT AND IMPLEMENTATION
DIVISION OF RESOURCE MANAGEMENT
DIVISION PROGRAM INFORMATION AND STATISTICS
AD-FINANCE & ACCOUNTING
DIVISION OF DEBT MANAGEMENT
DIVISION OF COMPLIANCE MANAGEMENT
DIVISION OF FINANCIAL MANAGEMENT
AD-BUDGET & ADMINISTRATION
DIVISION OF BUDGET PLANNING AND MANAGEMENT ANALYSIS
DIVISION OF MANAGEMENT SERVICES
DIVISION OF PERSONNEL
AD-PROGRAM POLICY
SPECIAL PROJECTS COORDINATOR
DIVISION OF REGULATORY PROGRAMS
DIVISION OF ABANDONED MINED LAND RECLAMATION
DIVISION OF TECHNICAL SERVICES
AD-EASTERN FIELD OPERATIONS
DEPUTY ADS.
EAD PROGRAM AND TECHNICAL SUPPORT
EAD PROGRAM OPERATIONS (FIELD OPERATIONS)
FIELD OFFICES
ADMINISTRATIVE SERVICE CENTER
AD-WESTERN FIELD OPERATIONS
DEPUTY AD
PROGRAM SUPPORT DIVISION
TECHNICAL ASSISTANCE DIVISION
FEDERAL PROGRAMS DIVISION
FIELD OFFICES
ADMINISTRATIVE SERVICE CENTER

General Statement

The mission of the Office of Surface Mining Reclamation and Enforcement (OSM) is to protect the public and the environment from the adverse effects of coal mining, while allowing access to the coal that is so important to the Nation's energy needs.

OSM was established with the passage of the Surface Mining Control and Reclamation Act (SMCRA) of 1977, Public Law 95-87, August 3, 1977.

To accomplish its mission, OSM performs two major functions: regulating, in a fair and even handed manner, current surface coal mining operations to assure protection of the environment during mining and reclamation of the land after the coal is extracted; and repairing mined areas left without adequate reclamation prior to passage of the Act and which continue, in their unreclaimed condition, to degrade the quality of the environment, prevent or damage the beneficial use of land or water resources, or endanger public health or safety.

The Act provides the means for restoring abandoned coal mines through collection of a tonnage-based reclamation fee assessed on current coal production. OSM's mandates are carried out by providing grants to States that implement regulatory and reclamation programs in accordance with OSM standards, and by administering and operating programs on Federal and Tribal lands and in certain States.

The following summary compares the President's Fiscal Year 1990 Budget to the Fiscal Year 1991 request:

1990 - 1991 Resource Comparisons

(Dollar amounts in thousands)

	FY 1990 Enacted To Date	FY 1991 Estimate	(+)/(-) From Enacted	Permanent Employment 12/31/89
Regulation and 1/ Technology ($)	102,728	110,845	+ 8,117	
(FTE-T)	743	743	---	729
Abandoned Mine 2/ Recl. Fund ($)	192,772	149,896	-42,876	
(FTE-T)	457 *	366 *	-91	376
TOTAL, OSM ($)	295,500	260,741	-34,759	
(FTE-T)	1,200 *	1,109 *	-91	1,105

1/ Totals for FY 1990 and 1991 include an estimated $1.5 million each year in indefinite appropriations for post-SMCRA reclamation activities. The funds are derived from bond forfeitures and civil penalties collected by OSM.

2/ FTE totals include non-OSM FTEs for Rural Abandoned Mine Program (RAMP). (In FY 1990, the RAMP program included 102 non-OSM FTEs; in FY 1991, the RAMP program will include 11 non-OSM FTEs.)

HIGHLIGHTS OF THE FISCAL YEAR 1991 BUDGET REQUEST

OSM's Fiscal Year 1991 budget request reflects a continuing commitment to maintain and improve the beauty and value of our natural resources by preventing coal mining abuse and reclaiming land previously disturbed by coal mining.

OSM and the States continue to make progress in carrying out their regulatory and reclamation mandates. Even before surface coal mining ends in an area, reclamation is taking place and the land is either being returned to its original shape and use, or it is being improved for new uses that will benefit landowners and communities. Nationwide, over 25,000 permits for mining and reclamation operations covering over 3.4 million acres have been issued. Land is continually being successfully reclaimed to mitigate the variety of problems that can result from mining, thus ensuring productive land use once mining is completed. Enforcement and monitoring programs are helping to deter potential violations of the Act and to ensure that when such violations occur, proper remedies are taken to the maximum extent possible. Since the Act was passed, over 7,384 sites totalling over 78,000 acres have been reclaimed. Evidence of the Act's positive effects is apparent in numerous communities, indicating that SMCRA's goal--to assure that coal mining's economic benefits are achieved without long term environmental degradation--is being realized.

OSM continues to enhance its partnership role with the States, promoting the recognition of States' accomplishments and stressing technical assistance to resolve remaining issues. At the same time, OSM strives to improve its oversight role through the early identification and resolution of problems. FY 1989 saw extensive progress in the implementation of the Technical Information Processing System (TIPS). TIPS provides the States with a set of analytical tools to aid in technical decision making on SMCRA issues. Installation of TIPS work stations in the 24 primacy States will be completed in FY 1990.

In FY 1989, OSM published several rules that are critical to implementing administration policies, such as enhancing the States' role in implementing SMCRA and eliminating unnecessary regulatory burdens. Of particular importance is the "ownership and control" rule, which defines "owns or controls" and expands the review of a permit applicant's compliance record to ensure that violators do not receive new permits. In May of 1989, the "permit rescission" rule became effective. This rule authorizes regulatory authorities to revoke or suspend permits when operators have unabated SMCRA violations or unpaid debt.

In the last year, OSM completed the reconciliation of the AML Fund. This project involved a reconciliation of AML grant expenditures, reconciliation of State/Federal share of AML allocations, and reconciliation of AML receipts. The three phase project was a significant effort which resulted in greatly improved accounting operations and procedures within OSM. As a result of the project, OSM records and accounts were corrected and updated, and operations were improved to provide a sound and efficient accounting system for the future.

The FY 1991 budget reflects OSM's ongoing goal to carry out SMCRA in the most efficient and effective manner possible. Major changes from the Fiscal Year 1990 appropriation are discussed below.

Regulation and Technology

State Regulatory Program Grants

The 24 primacy States continue to improve their performance as protectors of the environment through activities such as reviewing mine permit applications, inspecting current surface mining operations, and maintaining an enforcement program aimed at correcting SMCRA violations. SMCRA authorizes OSM to provide grants to primacy states in amounts not exceeding 50 percent of the cost of the program. Although in prior years States have indicated a need for and a capability to match increased funding, state program grants have not been substantially increased since 1988. Failure to provide sufficient funds could limit the States' ability to regulate coal mining. It is critical that the primacy States have adequate funds to administer their own regulatory programs and to protect the unique natural and cultural resources within their borders. Recognizing the importance of solid and capable State programs, an additional $6 million is requested for State regulatory program grants. The President and the Secretary of the Interior are committed to the promotion of a Federal/State partnership to preserve America's natural treasures; the increase will ensure the continuation of shared regulatory responsibility, because the States will have sufficient funds to administer strong and effective primacy programs.

Federal Regulatory Programs

This activity finances OSM's Federal regulatory program functions. There are four subactivities: (1) regulatory program operations; (2) Kentucky settlement agreement; (3) technical services, training, and research; and (4) assessments and collections.

o Regulatory Program Operations: The two major functions of this subactivity are oversight of State regulatory programs and Federal regulation of coal mining and reclamation operations in non-primacy areas. The oversight program provides assistance, evaluation, and monitoring of State programs to ensure compliance with SMCRA. The Federal regulatory program has responsibility for regulating coal mining in non-primacy States, on Federal lands in primacy States without cooperative agreements, and on Indian lands. In addition, the Federal regulatory program develops and administers cooperative agreements for State regulation of Federal lands and provides assistance to States participating in the small operator assistance program (SOAP). This subactivity includes inspecting mine sites as necessary. Through regulatory program operations, OSM supports the President's goal of responsible stewardship of our national resources by ensuring that coal mining is strictly regulated in all areas of the United States. This subactivity will be maintained at the current funding level.

o Kentucky Settlement Agreement: This subactivity provides financial and technical assistance to Kentucky with total funding of $13 million spread over four fiscal years. The 1991 proposal constitutes the final year of the plan, which is scheduled to terminate in mid-FY 1991. The decrease of $2,663,000 reflects planned reductions in funding requirements: -$1,613,000 is attributable to reduced personnel and benefits costs and indirect charges; contractual services are expected to decline by $850,000; and two studies and the bond release training effort will be funded in FY 1990, further reducing FY 1991 needs by $200,000.

- Technical Services, Training, and Research: This subactivity provides a multi-disciplinary technical assistance program to solve problems related to the environmental effects of coal mining. In this program, activities such as technical training, studies and applied research, technical publications, mine plan review, and experimental practices are carried out. FY 1991 funding will remain at the current funding level.

Assessments and Collections: This subactivity funds three components: civil penalty assessments, where OSM makes a determination as to the amount of penalty to be paid for SMCRA violations; civil penalty collections, where OSM identifies and pursues debtors; and, alternative enforcement, where OSM takes action to abate outstanding violations. This subactivity includes support for the Applicant Violator System (AVS), a nationwide data base used to control the issuance of coal mine permits. If applicants have unabated SMCRA violations or unpaid debts, they are identified in the AVS and they are blocked from receiving mining permits. On January 24, 1990, the Department of the Interior entered into an agreement with major environmental groups on improvements to the Applicant Violator System. OSM is requesting additional funding of $2,875,000 and four FTEs to implement the agreement. Funding for AVS improvement is critical to allow OSM to continue its ongoing program of penalizing SMCRA violators and enforcing environmental standards related to coal mining.

General Administration: General Administration is included as an activity in both the Regulation and Technology and the Abandoned Mine Reclamation Fund appropriations. There are three subactivities: (1) Executive Direction; (2) Administrative Support; and (3) General Services.

- Executive Direction: This subactivity supports the offices of the Director and Deputy Directors, and the Director's immediate staff offices. The President and the Secretary are committed to educating the public with regard to the Administration's natural resources policies. OSM is requesting an increase of $120,000 in Regulation and Technology (plus $80,000 in Abandoned Mine Land) to support initiatives to educate the American public on issues related to surface coal mining.

- Administrative Support: This subactivity provides administrative support in the functional areas of personnel; financial management; planning, budget and management analysis; management services; and information systems management. OSM is requesting:

  1. an increase of $65,000 in Regulation and Technology (plus $32,000 in the Abandoned Mine Land appropriation) to support the continued development of the Coal Data Management Information System (CDMIS). CDMIS is a computer system that will consolidate surface coal mining and reclamation data and other pertinent information presently maintained in several main frame and microcomputer systems. CDMIS will provide all of OSM's programmatic information needs within a central data base. On a daily basis, OSM and the States make decisions affecting the nation's environment; CDMIS will ensure that these decisions are based on the most current program data.

  2. an increase of $150,000 (in addition to $100,000 in the Abandoned Mine Land appropriation) to support the Secretary's initiative to promote the

career development and recruitment of women and minorities; OSM plans to augment its training and career enhancement programs with specific initiatives.

- General Services: This subactivity supports certain agency-wide expenses such as office space rental, communications, and postage, etc. that are grouped into one subactivity. The FY 1991 request includes an increase of $71,000 for participation in the Department of the Interior Take Pride in America Program.

Abandoned Mine Reclamation Fund

State Reclamation Program Grants.

OSM's request for grants represents a decrease of $33 million from the Fiscal Year 1990 level. As in prior years, the grants budget request is based on a review of the total amount of funds currently available to the States as well the States' ability to obligate. At the start of Fiscal Year 1990, over $439 million was available to the States for reclamation projects. (This amount included the FY 1990 appropriation of $150 million.) The total available to the States ($439 million) is 2.7 times more than the total amount obligated during Fiscal Year 1989 (in FY 1989, the States obligated $161 million.) Given the significant level of funds available to the States, and considering the States' five year history of obligating an average of $179 million annually, the requested decrease is both practical and appropriate.

Federal Reclamation Programs

This activity is divided into three subactivities associated with reclamation program administration and implementation: (1) Fee Compliance; (2) Reclamation Program Operations; and, (3) the Rural Abandoned Mine Program.

- Fee Compliance. This program serves to increase the Abandoned Mine Land Reclamation Fund by providing an ongoing audit and collections process aimed at ensuring coal operators' timely and accurate payment of the AML fees. FY 1991 funding will remain at the current funding level.

- Reclamation Program Operations. This program provides assistance and the evaluation of State reclamation programs; management of reclamation in non-primacy areas; management of the national AML inventory; and, delivery of the Federal emergency projects program. The FY 1991 request includes a decrease of $500,000; the program can be reduced due to the fact that OSM has already addressed most of the priority one and two projects in the inventory of Tribal lands and in non-primacy States. Furthermore, since Tribes now have access to their AML funds, they can manage high priority projects themselves.

- Rural Abandoned Mine Program (RAMP). As part of its plan to phase out RAMP, the reclamation program managed by the Soil Conservation Service of the U.S. Department of Agriculture, OSM requests a decrease of $9,886,000 and 91 FTEs in 1991. The total request of $2,114,000 for the program will provide funding for to complete ongoing projects. It is OSM's intent to phase out RAMP as it is more cost effective to rely on the States for reclamation rather than maintaining two separate delivery systems. New projects will be funded from the general AML fund to ensure that the priorities of SMCRA are met.

Small Operator Assistance Program (SOAP). This program provides financial and technical assistance to coal operators whose annual coal production totals less than 100,000 tons. A decrease of $500,000 is proposed as the 1991 request of $1,500,000 is commensurate with projected SOAP obligations; during the last two years, SOAP obligations were less than $1.6 million. Funding at the requested level will allow for continued assistance at an efficient level in meeting data requirements for new mining permits.

General Administration: General Administration is included as an activity in both the Regulation and Technology and the Abandoned Mine Reclamation Fund appropriations. There are three subactivities: (1) Executive Direction; (2) Administrative Support; and (3) General Services. The functions supported under this appropriation are the same as those described under the Regulation and Technology appropriation.

- Executive Direction. The 1991 request includes an increase of $80,000 to support initiatives to educate the American public on issues related to surface coal mining.

- Administrative Support. The proposed increase of $132,000 in this subactivity is aimed at two areas:

    1. an increase of $32,000 is requested to support the continued development of CDMIS.

    2. an increase of $100,000 will support the Secretary's initiative for career development and recruitment of women and minorities.

- General Services. This subactivity will remain at the FY 1990 level.

Appropriation Summary Statement

Appropriation: Regulation and Technology

This appropriation finances the regulatory functions of the Surface Mining Control and Reclamation Act of 1977 (SMCRA) as administered by the States and by the Office of Surface Mining Reclamation and Enforcement (OSM). Federal activities related to the administration and monitoring of State regulatory programs are also financed by this appropriation.

The total request is $110,845,000, an increase of $6,618,000 and four FTEs from the Fiscal Year 1991 base.

Activities covered under this appropriation and changes from the base include:

1. State Regulatory Program Grants: (+$6,000,000) - This activity provides grant monies to the 24 primacy States in order to fund activities associated with the operation of their regulatory programs. Grants are provided to the States in amounts not exceeding 50% of their program costs. An increase of $6 million is requested to provide the States with adequate funds to continue to administer their regulatory programs and to protect the unique natural and cultural resources within their borders. The President and Secretary are committed to the promotion of a Federal/State partnership to preserve America's natural treasures; the increase will ensure the continuation of a shared regulatory responsibility, as the States will have sufficient funds to maintain strong and effective primacy programs.

2. Federal Regulatory Programs: (+212,000, 4 FTEs) - This activity finances OSM's Federal regulatory program functions. There are four subactivities: (1) regulatory program operations; (2) Kentucky settlement agreement; (3) technical services, training, and research; and (4) assessments and collections.

   - o Regulatory Program Operations: (no change) - The two major functions of this subactivity are oversight of State regulatory programs and Federal regulation of coal mining and reclamation operations in non-primacy areas. The oversight program provides assistance, evaluation, and monitoring of State programs to ensure compliance with SMCRA. The Federal regulatory program has responsibility for regulating coal mining in non-primacy States, on Federal lands in primacy States without cooperative agreements, and on Indian lands. In addition, the Federal regulatory program funds development and administration of cooperative agreements for State regulation of Federal lands and provides assistance to States participating in the small operator assistance program (SOAP). This subactivity provides funds for inspecting mine sites as necessary. Through regulatory program operations, OSM supports the President's goal of responsible stewardship of our national resources by ensuring that coal mining is strictly regulated in all areas of the United States.

   - o Kentucky Settlement Agreement: (-$2,663,000) - This subactivity provides financial and technical assistance to Kentucky with total funding of $13 million spread over four fiscal years. The 1991 proposal constitutes the final year of the plan, which is scheduled to terminate in mid-FY 1991. The decrease of $2,663,000 reflects planned reductions in funding requirements: a decrease of $1,613,000 is attributable to reduced personnel and benefits costs and indirect charges; contractual services are expected to decline by $850,000; and two studies and the bond release training effort will be funded in FY 1990, further reducing FY 1991 needs by $200,000.

- Technical Services, Training, and Research: (no change) - This subactivity provides for a multi-disciplinary technical assistance program to solve problems related to the environmental effects of coal mining. Within this subactivity, OSM manages efforts such as the research program aimed at solving regulatory and reclamation problems; a technical training program to improve the technical skills of inspectors and other staff; and a technology transfer effort whereby study findings are disseminated to the States and industry. Through this subactivity, staff deliver technical advice and assistance to the States on a wide range of issues.

- Assessments and Collections: (+$2,875,000, 4 FTEs) - This subactivity funds three components: civil penalty assessments, where OSM makes a determination as to the amount of penalty to be paid for SMCRA violations; civil penalty collections, where OSM identifies and pursues debtors; and, alternative enforcement, where OSM takes action to abate outstanding violations. This subactivity includes support for the Applicant Violator System (AVS), a nationwide data base used to control the issuance of coal mine permits. If permit applicants have unpaid or reclassified fee debt, they are identified in the AVS and their debts must be repaid before new permits are issued. On January 24, 1990, the Department of the Interior entered into an agreement with major environmental groups on improvements to the Applicant Violator System. OSM is requesting additional funding of $2,875,000 and four FTEs to implement the agreement. Funding for AVS improvement is critical to allow OSM to continue its ongoing program of penalizing SMCRA violators and enforcing environmental standards related to coal mining.

3. General Administration: (+$406,000) - General Administration is included as an activity in both the Regulation and Technology and the Abandoned Mine Reclamation Fund appropriations. There are three subactivities: (1) Executive Direction; (2) Administrative Support; and (3) General Services.

   - Executive Direction: (+$120,000) - This subactivity supports the offices of the Director and Deputy Directors, and the Director's immediate staff offices. The President and the Secretary are committed to educating the public with regard to the Administration's natural resources policies. OSM is requesting an increase of $120,000 in Regulation and Technology (plus $80,000 in Abandoned Mine Land) to support initiatives to educate the American public on issues related to surface coal mining.

   - Administrative Support: (+$215,000) - This subactivity provides administrative support in the functional areas of personnel; financial management; planning, budget and management analysis; management services; and information systems management. Increases are requested in two areas:

1. an increase of $65,000 in Regulation and Technology (plus $32,000 in the Abandoned Mine Land appropriation) is requested to support the continued development of the Coal Data Management Information System (CDMIS). CDMIS is a computer system that will consolidate surface coal mining and reclamation data and other pertinent information presently maintained in several main frame and microcomputer systems. CDMIS will provide all of OSM's programmatic information needs within a central data base. On a daily basis, OSM and the States make decisions affecting the nation's environment; CDMIS will ensure that these decisions are based on the most current program data.

2. OSM is also requesting $150,000 (in addition to $100,000 in the Abandoned Mine Land appropriation) to support the Secretary's initiative to promote the career development and recruitment of women and minorities; OSM plans to augment its training and career enhancement programs with specific initiatives.

o General Services: (+$71,000) - This subactivity supports certain agency-wide expenses such as office space rental, communications, and postage, etc. that are grouped into one subactivity. The FY 1991 request includes an increase of $71,000 for participation in the Department of the Interior Take Pride in America Program.

DEPARTMENT OF THE INTERIOR
Office of Surface Mining Reclamation and Enforcement
Regulation and Technology

For necessary expenses to carry out the provisions of the Surface Mining Control and Reclamation Act of 1977, Public Law 95-87, including the purchase of not to
exceed [14] passenger motor vehicles of 15
which [9] shall be for replacement only; 11
and uniform allowances of not to exceed $400 for each uniformed employee of the Office of Surface Mining Reclamation and
Enforcement; [$102,238,000] and $109,345,000
notwithstanding 31 U.S.C. 3302, an additional amount, to remain available until expended, equal to receipts to the General Fund of the Treasury from performance bond forfeitures in fiscal
year [1990]: Provided, That notwith- 1991
standing any other provision of law, the Secretary of the Interior, pursuant to regulations, may utilize directly or through grants to States, moneys
collected in fiscal year [1990] pursuant 1991
to the assessment of civil penalties under section 518 of the Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1268), to reclaim lands adversely affected by coal mining practices after August 3, 1977, to remain available until expended: Provided further, That the Secretary of the Interior shall abide by and adhere to the terms of the Settlement Agreement in NWR v. Miller, C.A. No.86-99 (E.D. Ky), and not take any actions inconsistent with the provisions of footnote 3 of the Agreement with respect to any State or Federal program: Provided further, that not withstanding any other provisions of law, appropriations for the Office of Surface Mining Reclamation and Enforcement may provide for the travel and per diem expenses of State and tribal personnel attending Office of Surface Mining Reclamation and Enforcement sponsored training.

(Department of the Interior and Related Agencies Appropriations Act, 1990. Public Law 101-121.)

Department of the Interior and Related Agencies Appropriations Act, 1991

Office of Surface Mining Reclamation and Enforcement

Appropriation: Regulation and Technology

A. Appropriation Language

For necessary expenses to carry out the provisions of the Surface Mining Control and Reclamation Act of 1977, Public Law 95-87, $_____ including the purchase of not to exceed ___ passenger motor vehicles for replacement only.

B. Appropriation Language Citations and Explanations

1. For necessary expenses to carry out the provisions of Surface Mining Control and Reclamation Act of 1977, P.L. 95-87,

   a. 30 U.S.C. 1252: Provides that no person shall open or develop any new or previously mined or abandoned surface coal mining operations on lands regulated by the State without obtaining a permit from the State's Regulatory Authority.

   b. 30 U.S.C. 1253: Provides that each State desiring to assume exclusive jurisdiction over coal mining activities within its boundaries may submit a State program which demonstrates that it has the capability of carrying out the provisions of P.L. 95-87.

   c. 30 U.S.C. 1254: Provides that the Secretary will prepare, promulgate, and implement a Federal program for a State that fails to submit a State program; fails to resubmit an acceptable State program; or fails to implement, enforce, or maintain its approved State program as provided for in P.L. 95-87.

   d. 30 U.S.C. 1256 & 1257: Provides that pursuant to the approval of a State or Federal program, no person will carry on coal mining activities within that State without first obtaining a permit issued by that State which is accompanied by a permit fee determined by the Regulatory Authority.

   e. 30 U.S.C. 1266: The Secretary will promulgate rules and regulations directed toward the surface effects of underground coal mining operations that will not conflict with or supersede any provision of the Federal Coal Mine Health and Safety Act of 1969 (30 U.S.C. 801).

   f. 30 U.S.C. 1272: Provides that to be eligible to assume primary regulatory authority, each State will establish a planning process enabling objective decisions based upon competent and scientifically sound data and information as to which, if any, land areas are unsuitable for all or certain types of surface coal mining.

   g. 30 U.S.C. 1273: The Secretary will promulgate and implement a Federal lands program which will be applicable to all surface coal mining and reclamation operations taking place on Federal lands and designate Federal lands unsuitable for coal mining where required.

h. 30 U.S.C. 1281: The Secretary may, or at the request of the Governor of a particular State shall, review any area within Federal lands to assess whether it may be unsuitable for non-coal mining operations.

i. 30 U.S.C. 1295: The Secretary is authorized to make annual grants to any State for the purpose of assisting such State in developing, administering, and enforcing a State program under P.L. 95-87.

j. 30 U.S.C. 1300: The Secretary is directed to study the question of the regulation of surface coal mining on Indian lands.

2. $______ including the purchase of not to exceed ____ passenger motor vehicles for replacement only.

30 U.S.C. 1302

a. 30 U.S.C. 1302: Provides authorization for appropriation of funds to the Secretary for the purpose of carrying out the requirements of P.L. 95-87.

C. Basic Authorizing Legislation

The Office of Surface Mining Reclamation and Enforcement's (OSM's) authorization is derived from the Surface Mining Control and Reclamation Act of August 3, 1977 (30 U.S.C. 1201 et seq.). The purposes of this law include: (1) protecting society and the environment from the effects of coal mining operations; (2) reclaiming existing and future mined acres which endanger public health and safety, prevent or damage the beneficial use of land or water resources, or decrease environmental quality; (3) providing a special fund for abandoned mine reclamation; and (4) providing technical and financial assistance to States with primary regulatory authority over coal mining activities within their boundaries.

Since most States with minable coal reserves have obtained regulatory authority over those coal mining operations, OSM has shifted into an oversight role with respect to those States. OSM's oversight policy ensures that States properly implement their approved regulatory programs and meet the requirements of the Surface Mining Act. Also, OSM administers Federal programs in States which have not developed their own regulatory programs.

D. Activity Structure

1. State Regulatory Program Grants
2. Federal Regulatory Programs
    a. Regulatory Program Operations
    b. Kentucky Settlement Agreement
    c. Technical Services, Training, and Research
    d. Assessments and Collections
3. General Administration
    a. Executive Direction
    b. Administrative Support
    c. General Services

E. Authorization by Activity

1. State Regulatory Program Grants

Description: This activity provides funds to the States to regulate surface coal mining. Funds are provided for the following:

a. Program Development - To assist States in developing regulatory programs.

b. Administration and Enforcement - To assist States in maintaining approved regulatory programs in accordance with the Surface Mining Control and Reclamation Act. The primary functions of the State regulatory authorities include review and issuance of permits, inspection and enforcement, designation of lands unsuitable for mining, administration of bonding and bond release programs that ensure proper reclamation of land after mining; and administration of small operator assistance programs.

c. Cooperative Agreements - To assist States (with regulatory authority over non-Federal coal mining operations) in regulating mining activities on Federal lands. This function is performed by the States for the Federal Government. The States' activities in this function include the required inspections of regulated facilities on Federal lands.

Authority: 30 U.S.C. 1295 - The Secretary is authorized to make annual grants to any State for the purpose of assisting that State in developing, administering, and enforcing State programs under the Surface Mining Control and Reclamation Act and for providing technical assistance and training.

2. Federal Regulatory Programs

Description: This activity finances OSM's Federal regulatory program functions and has four primary subactivities:

a. Regulatory Program Operations - includes monitoring and evaluation of programs in primacy States to assure each State's compliance with its approved regulatory program; assistance to State programs and administration and development of cooperative agreements for State regulation of Federal lands; conduct of regulatory programs in non-primacy States, on Indian lands, and on Federal lands not covered by cooperative agreements; assistance to States in the Small Operator Assistance Program; and regulation and inspection functions.

b. Kentucky Settlement Agreement - allows for a one time plan of financial and technical assistance to Kentucky of $13 million over four years to improve its regulatory performance.

c. Technical Services, Training, and Research - includes technical advice and assistance on regulatory program operations; technical augmentation of State program evaluation functions; training; studies and applied research; technical publications; technical assistance to small operators; mine plan review and other NEPA-related compliance; provision of expert testimony in judicial and administrative proceedings; and administration of OSM's experimental practices program.

d. Assessments and Collections - includes functions associated with imposing and collecting civil penalties, and developing and maintaining information management systems that support these functions as well as enhance the agency's ability to deny new mining permits to applicants with unabated State or Federal violations, unpaid civil penalties, or unpaid Abandoned Mine Land fees.

Authority

1. Regulatory Program Operations

   30 U.S.C. 1252, 1253, 1254, 1271, 1273, 1300, 1302

   These sections provide for aid to all primacy States for maintaining approved regulatory programs and evaluation of the States' performance in doing so; monitoring implementation of the grant programs; small operator assistance programs; and for regulatory programs in States without approved programs, on Federal lands and on Indian lands.

2. Settlement Agreement

   30 U.S.C. 1252, 1253, 1254, 1271, 1273, 1300, 1302

   These sections provide for aid to Kentucky for maintaining its approved regulatory program and evaluation of State's performance in doing so; including monitoring implementation of the grant program.

3. Technical Services, Training, and Research

   30 U.S.C. 1252, 1272, 1273, 1295, 1302

   These sections provide for processing of permit applications and mine plans for Federal lands operations; designating of lands unsuitable for surface mining through technical reviews; scientific/engineering support and technical training for States operating approved permanent programs and federally-administered programs; initiation of research projects and technical studies; issuance of technical publications; approval of experimental practices to meet the needs of approved State programs and federally-administered programs; preparation of environmental assessments and impact statements for permits and other actions; and training of OSM staff and State staff to enable these agencies to more effectively carry out the provisions of the Act.

4. Assessments and Collections

30 U.S.C. 1260, 1268

These sections provide for the assessment and collection of penalties levied for violations of the Act, and for the denial of permits to those with unabated violations or unpaid penalties.

3. General Administration

Description: This activity provides funding for OSM executive direction, administrative support, and general services.

Authority

30 U.S.C. 1302

This section provides for funds to be appropriated for administrative costs necessary for carrying out the provisions of P.L. 95-87.

F. Administrative Provisions

None

Office of Surface Mining Reclamation and Enforcement
Summary of Requirements
(Dollar Amount in Thousands)

Appropriation: Regulation and Technology	FTE	AMOUNT	FTE	AMOUNT
Appropriations enacted, 1990			743	102,728
SUMMARY OF BASE ADJUSTMENTS:				
Additional Cost in 1991 of the 1991 Pay Raise		529		
Adjustment for Rental Payments to GSA		455		
Adjustment for Drug Free Workplace		7		
Adjustments for Fixed Costs 1/	-4	-92		
Adjustment for Current Operations		600		
Total Adjustments to Base	-4	1,499	- 4	+ 1,499
1991 Base Budget			739	104,227
Program Changes (Changes to Base Budget, detailed below)			+ 4	+ 6,618
Total Requirements (1991 Estimate)			743	110,845

Comparison by activity/subactivity:	FY 1989 Actual FTE	FY 1989 Actual AMOUNT	FY 1990 Enacted to Date FTE	FY 1990 Enacted to Date AMOUNT	FY 1991 Base FTE	FY 1991 Base AMOUNT	FY 1991 Estimate FTE	FY 1991 Estimate AMOUNT	Inc.(+) Dec(-) From 1990 FTE	Inc.(+) Dec(-) From 1990 AMOUNT	Inc.(+) Dec(-) From 1991 Base FTE	Inc.(+) Dec(-) From 1991 Base AMOUNT
State Regulatory Grants	---	41,910	---	41,910	---	41,910	---	47,910	---	+ 6,000	---	+ 6,000
Federal Regulatory Programs:												
Regulatory Program Ops. 2/	352	21,387	354	21,950	354	22,398	354	22,398	---	+ 448	---	0
Technical Services, Training, and Research	184	13,470	174	13,026	174	13,243	174	13,243	---	+ 217	---	0
Kentucky Settlement Agreement	---	4,425	---	3,772	---	3,772	---	1,109	---	- 2,663	---	- 2,663
Assessments and Collections	89	8,981	100	9,100	96	9,220	100	12,095	---	+ 2,995	+4	+ 2,875
Subtotal	625	48,263	628	47,848	624	48,633	628	48,845	---	+ 997	+4	+ 212
General Administration:												
Executive Direction	39	1,761	30	1,589	30	1,634	30	1,754	---	+ 165	---	+ 120
Administrative Support	97	5,649	85	6,487	85	6,592	85	6,807	---	+ 320	---	+ 215
General Services	---	4,589	---	4,894	---	5,458	---	5,529	---	+ 635	---	+ 71
Subtotal	136	11,999	115	12,970	115	13,684	115	14,090	---	+ 1,120	---	+ 406
Total Requirements	761	102,172	743	102,728	739	104,227	743	110,845	---	+ 8,117	+4	+ 6,618

1/ Includes adjustments for: Departmental Working Capital Fund (-20), CSRS/FERS Retirement Costs (+107), Workers Compensation (+122), One More Paid Day in FY 1991 (+113), Adjustment for Administrative Efficiency (-261), Adjustment for Staffing Efficiency (-153, -4FTEs).

2/ Includes indefinite appropriations for bond forfeiture and civil penalty reclamation activities ($1.077 million in FY 1989, $1.5 million in FY 1990 and 1991.)

DEPARTMENT OF THE INTERIOR
Office of Surface Mining Reclamation and Enforcement
Justification of Adjustments to Base
(In Thousands of Dollars)

Appropriation: Regulation and Technology

Adjustment for Administrative Efficiency................................-$261

The Department is proposing to decrease spending for consultants, travel, overtime, supplies, and equipment by about 5 percent to improve administrative efficiency and place greater priority on 1991 program initiatives. Specific reductions are proposed in the following areas:

Travel	-$ 87
Overtime	-$ 4
Supplies	-$ 58
Equipment	-$112
Total	-$261

Adjustment for Staffing Efficiency.......................................-$153

Savings are proposed from a planned reduction in the average grade achieved by filling vacant positions at an average of one grade lower than previously filled and from taking into account an expected additional lapse of 30 days before filling positions that become vacant in 1991. Specific reductions follow:

Average Grade	-$ 68
Lapse	-$ 85
Total	-$153

FTE Adjustment for Administrative Reduction..............................-4 FTEs

This is the estimate of the number of FTEs that will be saved from refraining from filling expected vacancies for one month longer than normal. The number of vacancies was determined by using an average attrition rate of 5% applied to the FTE usage.

Additional Cost in 1991 of the 1991 pay raise..........................+$529

The adjustment is for the additional amount needed in 1991 to cover 40 percent of the additional three quarters' cost of the estimated 3.5 percent pay raise effective in January 1991. The total amount is for general schedule pay. The 1991 cost of the remaining 60 percent will be absorbed in FY 1991.

Workers Compensation Payments...+$122

The adjustment is for increased costs of unemployment compensation claims to be paid to the Department of Labor, Federal Employees Compensation Account, in the Unemployment Trust Funds, pursuant to Public Law 96-499.

Rental Payments to GSA ....+$455

The adjustment is for increased cost payable to GSA resulting from higher rates for office and non office space.

CSRS/FERS Retirement Costs ....+$107

The adjustment is for the increase in estimated retirement costs resulting from the continuing growth in the relative proportion of FERS employees in the Bureau work force.

Departmental Working Capital Fund ....-$ 20

The adjustment is for decreased costs assigned to the bureau for administrative services provided on a Department-wide basis. In FY 1991, costs for the Washington Interagency Telecommunications System (WITS), the GSA-provided computerized telephone system for the Interior Complex and the Department's in-house data interface/transport system, will decrease. Major acquisition and start-up costs for WITS will occur in FY 1990, with reduced costs in 1991 related primarily to maintenance. This reduction will be partially offset by adjustments for safety management and printing.

One More Paid Day in 1991 ....+$113

The increase in personnel compensation results from there being one more paid day in FY 1991 than in FY 1990.

Drug Free Workplace ....+$ 7

The adjustment is for increased costs of fostering a drug free workplace.

Adjustment for Current Operations ....+$600

Preliminary information indicates that bureau operating costs for current on-board staff may be exceeding available resources. The bureau has requested an Inspector General review of the matter while the bureau continues its own review of this potential 1990 funding shortfall. This base adjustment would avoid extending the potential 1990 shortfall into 1991.

Analysis by Subactivity

Activity: Federal Regulatory Programs

(Dollars in thousands)

Subactivity	FY 1989 Actual	FY 1990 Enacted	FY 1991 Base	FY 1991 Estimate	Inc.(+) or Dec.(-) from 1991 Base
Regulatory Program Operations 1/	21,387	21,950	22,398	22,398	----
Kentucky Settlement Agreement	4,425	3,772	3,772	1,109	-2,663
Technical Services Training and Research	13,470	13,026	13,243	13,243	----
Assessments and Collections	8,981	9,100	9,220	12,095	+2,875
TOTAL	48,263	47,848	48,633	48,845	+212

1/ Subactivity total includes indefinite appropriations for bond forfeiture and civil penalty reclamation activities ($1.077 million in FY 1989, $1.5 million in FY 1990 and 1991).

Analysis by Subactivity

Activity: General Administration

(Dollars in thousands)

Subactivity	FY 1989 Actual	FY 1990 Enacted	FY 1991 Base	FY 1991 Estimate	Inc.(+) or Dec.(-) from 1991 Base
Executive Direction	1,761	1,589	1,634	1,754	+120
Administrative Support	5,649	6,487	6,592	6,807	+215
General Services	4,589	4,894	5,458	5,529	+71
Total	11,999	12,970	13,684	14,090	+406

Justification of Program and Performance

Activity: State Regulatory Program Grants

(Dollar Amounts In Thousands)

	FY 1990 Enacted	FY 1991 Base	FY 1991 Estimate	Inc.(+) Dec.(-) From 1990	Inc.(+) Dec.(-) From Base
State Regulatory Program Grants					
($)	41,910	41,910	47,910	+6,000	+6,000
(FTE)	---	---	---	---	---

Authorization: 30 U.S.C. 1295 (Section 705(a) Surface Mining Control and Reclamation Act of 1977).

Activity Objectives:

1. Maintain effective State programs in primacy States.
2. Provide funds through cooperative agreements to States for administering regulatory programs on Federal lands.

Base Program: The Surface Mining Control and Reclamation Act (SMCRA) allows States that wish to assume regulatory responsibility for surface coal mining activities within their boundaries to do so by submitting proposed permanent regulatory programs for approval by the Secretary. Twenty-four States have approved permanent regulatory programs (primacy) for the regulation of coal mining activities. Table 1 is a listing of primacy States and the dates of program approval.

Under SMCRA, States receive grants to implement their regulatory programs. In the first year while developing their regulatory programs, each State may receive up to 80 percent in Federal matching funds, 60 percent in the second year and 50 percent in all subsequent years. Since all twenty-four States have had primacy for some time, grants now cannot exceed 50 percent of total State costs each year.

TABLE 1
STATES WITH PRIMACY

STATE	DATE APPROVED
Alabama	05/20/82
Alaska	03/23/83
Arkansas	11/21/80
Colorado	12/15/80
Illinois	06/01/82
Indiana	07/26/82
Iowa	01/21/81
Kansas	01/21/81
Kentucky	05/18/82
Louisiana	10/10/80
Maryland	12/01/80
Mississippi	09/04/80
Missouri	11/21/80
Montana	04/01/80
New Mexico	12/31/80
North Dakota	12/15/80
Ohio	08/10/82
Oklahoma	01/19/81
Pennsylvania	07/30/82
Texas	02/27/80
Utah	01/21/81
Virginia	12/15/81
West Virginia	01/21/81
Wyoming	11/26/80

OSM believes it is important to continue to provide the 50 percent in matching funds to primacy States, not only because each State has the unique capabilities and knowledge to regulate and enforce the coal mining industry within their borders, but also because it is cost effective to the Federal government. If any State relinquished primacy, OSM would have to hire sufficient numbers and types of employees to implement the program. Also, additional solicitors may be needed. The Federal salaries and supporting costs would exceed that paid by States and the Federal government would have to pay 100 percent of costs rather than 50 percent.

As allowed by SMCRA, Administration and Enforcement (A & E) grants are awarded to States with approved regulatory programs. Activities of State regulatory authorities funded by these grants include permit review and issuance, with reliance on the Applicant Violator System (AVS) for assurance that permits will not be issued to operators with outstanding violations; inspection and enforcement; designation of lands unsuitable for mining; administration of a bonding and bond release program for reclamation of land after mining; and administration of a State Small Operator Assistance Program. In addition, special activities are conducted by individual States to address specific needs. These activities may include expanding permitting programs; computerizing systems to improve review of pending permits, and; drafting regulations that respond to changes in OSM's rules.

OSM's field office staff conduct evaluations to identify State accomplishments and areas for improvement. The status of each State's regulatory program is presented in OSM's Annual Evaluation Report. The evaluation process is described under the regulatory program operations subactivity.

In addition to A & E grants, States also receive funds to regulate surface coal mining activities on Federal lands within their State under cooperative agreements. These agreements are executed only with States with approved regulatory programs who request and receive authority to perform the regulatory functions on Federal lands. States with whom OSM have cooperative agreements review and issue permits and conduct the required inspections of regulated facilities on Federal lands. These agreements provide for uniform enforcement of State program requirements at all facilities within the State and reduce both direct Federal program costs and Federal staff requirements. Section 705(c) limits the amount that a State may receive through a cooperative agreement to the amount which the Federal government would have to spend to do the same work.

Table 2 indicates States with cooperative agreements as of November 1989. Oklahoma recently requested authority to perform regulatory functions on Federal lands in its State. The request was published in the December 14, 1988 Federal Register. Public comments were received and incorporated into the final cooperative agreement. Oklahoma's cooperative agreement became effective as of October 11, 1989.

TABLE 2
Status of Cooperative Agreements
November 1989

STATE	30 CFR PART	PUBLICATION DATE	EFFECTIVE DATE
AL	901	07/30/85	08/28/85
CO	906	10/06/82	10/06/82
IL	913	11/27/87	12/28/87
MT	926	04/08/81	05/08/81
NM	931	12/20/82	12/20/82
ND	934	09/15/83	09/15/83
OH	935	04/13/84	04/13/84
OK	936	09/11/89	10/11/89
UT	944	03/13/87	04/13/87
VA	946	04/07/87	05/07/87
WV	948	03/09/84	03/09/84
WY	950	01/28/81	03/18/81

All active and inactive areas, facilities and areas in support of coal mining and reclamation within a State, including those under a cooperative agreement, are examined by the State regulatory authority (SRA) for compliance with all program requirements. A complete inspection includes on-site review of all permit requirements and conditions under the State program. A partial inspection is an on-site review of an operator's compliance with some of the permit requirements and conditions under the State program. SMCRA requires all active inspectable units under the permanent program to have four complete and eight partial inspections per year.

As noted earlier, OSM prepares reports that evaluate State performance in the enforcement of its approved regulatory program. The States continue to show improvement in the various aspects of regulatory program management. The States have moved toward full compliance with Federal and State laws and regulations related to issues in cultural resources, natural resources and water quality. Most areas of permit review and issuance now reflect this compliance. Also, States are implementing permitting requirements for coal-processing plants pursuant to 30 CFR 701.5. States also have been responsive in proposing amendments to their regulatory programs in order to reflect recent changes in Federal regulations.

With regard to inspection and enforcement activities, the States' overall inspection frequency for required inspections continues to average over 97 percent, with thirteen States meeting a 100 percent inspection frequency level and eight meeting a higher than 97 percent inspection level. States also improved their inspection report and civil penalty assessment documentation. A majority of States reported that they have improved in the area of addressing citizens' complaints. In addition, States have instituted ongoing evaluations of management and administrative processes related to their inspection programs.

TABLE 3
FISCAL YEAR 1991
REGULATORY GRANT ESTIMATES 1/

STATE/ TRIBE	NON - FEDERAL LANDS	FEDERAL LANDS	TOTAL
Alabama	$1,080,876	$31,582	$1,112,458
Alaska	230,994	-0-	230,994
Arkansas	183,052	-0-	183,052
Colorado	296,369	1,055,178	1,351,547
Illinois	2,113,811	122,000	2,235,811
Indiana	1,507,997	-0-	1,507,997
Iowa	156,901	-0-	156,901
Kansas	178,693	-0-	178,693
Kentucky	10,647,504	-0-	10,647,504
Louisiana	183,052	-0-	183,052
Maryland	536,080	-0-	536,080
Mississippi	74,092	-0-	74,092
Missouri	392,254	-0-	392,254
Montana	248,427	465,507	713,934
New Mexico	292,011	224,534	516,545
North Dakota	226,635	231,456	458,091
Ohio	3,059,578	77,008	3,136,586
Oklahoma	876,033	82,199	958,232
Pennsylvania	12,085,767	-0-	12,085,767
Texas	1,128,819	-0-	1,128,819
Utah	248,427	1,054,745	1,303,172
Virginia	3,316,722	20,766	3,337,488
West Virginia	4,327,864	-0-	4,327,864
Wyoming	191,769	961,298	1,153,067
TOTAL	$43,583,727	$4,326,273	$47,910,000

1/ These figures are *estimates* that will undergo continued review. They are based on estimates supplied by the States at OSM's request, up to 18 months in advance of the applicable fiscal year. The estimates are evaluated by field office and headquarters personnel and adjusted as necessary. As the applicable fiscal year approaches and applications are submitted by States, adjustments are often made by the States to the amounts requested. Finally, OSM's review of these applications may lead to further adjustments.

Increase for Fiscal Year 1991	1991 Base	1991 Estimate	Inc. (+)
	(Dollar amounts in thousands)		
($)	41,910	47,910	+6,000
(FTE-T)	---	---	---

Under SMCRA, States with primacy have the most direct and critical responsibilities for conducting regulatory operations; they have the unique capabilities and knowledge to regulate the lands within their borders. Providing a 50 percent match of Federal funds to primacy States results in the highest benefit and the lowest cost to the Federal government. If any State relinquished primacy, OSM would have to hire sufficient numbers and types of employees to implement the program and additional solicitors may be needed. The cost to the Federal government would be significantly higher; instead of funding 50 percent of a lower cost regulatory program, OSM would have to fund 100 percent of a more costly program. Therefore, OSM feels it is important to continue to support the States in the administration of their programs and to ensure that SMCRA's intent is carried out.

Funding for the regulatory grant program has been at the same level since 1988. The States have not received increases for fixed costs such as salaries, supplies, vehicles, rentals, etc. Therefore, it is increasingly more difficult for the States to enhance or maintain certain aspects of their programs such as the high level of inspections accomplished, and writing and submitting necessary program amendments.

The proposed increase will provide funds for the State regulatory authorities to continue to implement effective programs by allowing for increases in salaries, supplies, vehicles, and associated costs due to inflation. Without the increase, the States would be constrained in accomplishing the goals of SMCRA in a sound and adequate manner.

The request is based on estimates submitted by the States and analyzed by OSM. OSM analysis includes consideration of staffing level adequacy and compares past State funding and performance with the estimated and proposed activities.

The entire increase will occur in Object Class 41, Grants.

Justification of Program and Performance

Activity: Federal Regulatory Programs
Subactivity: Regulatory Program Operations

(Dollar Amounts In Thousands)

	FY 1990 Enacted	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From 1990	Inc. (+) Dec. (-) From Base
Regulatory Program Operations 1/					
($)	21,950	22,398	22,398	+448	---
(FTE-T)	354	354	354	---	---

Authorization: 30 U.S.C. 1252, 1253, 1254, 1273, 1300, 1302 (Sections 502, 503, 504, 523, 710, and 712) (Surface Mining Control and Reclamation Act of 1977).

Objectives

1. Provide assistance to primacy States in maintaining their regulatory programs to ensure compliance and process program amendments as necessary.

2. Conduct an oversight program of approved State regulatory programs and programmatic cooperative agreements and report to Congress on States' performance.

3. Conduct all inspections necessary to monitor and evaluate State program administration and all inspections required for Federal enforcement activities.

4. Administer a program for assistance to small operators.

5. Maintain federally-administered programs in States without approved programs and on Indian lands, and Federal lands responsibilities in States without a cooperative agreement.

6. Support reclamation activities with funds derived from bond forfeiture and the collection of civil penalties.

1/ The totals include estimates for indefinite appropriations derived from bond forfeitures and civil penalties which are used to fund post-SMCRA reclamation projects. The total estimate is $1.5 million in each year.

Base Program

The two major functions of this subactivity are oversight of State regulatory programs and Federal regulation of coal mining and reclamation operations in States without primacy and on Indian lands. This subactivity includes the components of State programs, regulation and inspection, small operator assistance, Federally-administered programs, Federal lands programs, Indian lands programs, and reclamation of bond forfeiture sites.

The staffs' responsibilities include: (1) monitoring and evaluation activities to ensure effective implementation of approved State programs and SMCRA; (2) conducting regulatory program operations in non-primacy States, on Indian lands and on Federal lands in primacy States that do not have cooperative agreements; (3) assisting States participating in the small operator assistance program; (4) carrying out regulation and inspection activities; and (5) distribution of funds, administration, and evaluation of reclamation projects performed pursuant to bond forfeitures.

A brief description of these two major functions follows with more detail provided in the sections on State Programs and Regulation and Inspection.

Oversight of State Programs

These programs are designed to assist, evaluate, and review State programs to ensure compliance with the Act. Once a State obtains approval of its permanent regulatory program, OSM provides technical assistance to the State in meeting permanent program requirements and verifies that requirements of the Act and approved programs are being met. The components involved are State Programs, Regulation and Inspection, and Small Operator Assistance.

OSM monitors a State's performance in implementing its approved regulatory program by collection and analysis of data on the State's activities. OSM addresses State program issues through informal and formal meetings. In order to assure a quick resolution of most problems, mutually agreed upon action plans are established, as needed. Sources of information used to monitor State performance include: oversight inspections; program data furnished by the State; data from individuals, citizen groups, or industry; and information gathered in periodic reviews of the regulatory program. OSM annually conducts an evaluation of each State's program. The results are documented with supporting data and analyses. The State has the opportunity to review and comment on any findings and recommendations. The States' comments are considered before completion of the final evaluation report. Once approved by the Director, the final report is sent to Congress.

• Federal Regulatory Programs

These programs were established to regulate coal mining activities in non-primacy States, on Federal lands in primacy States without cooperative agreements, and on Indian lands. The components of these programs are the (1) Federally-administered State programs, (2) Federal lands programs, (3) Indian lands program, (4) a portion of regulation and inspection, and (5) Federal SOAP program.

Summary of Workload Data and Proposed Increase/Decrease for Fiscal Year 1991

(Dollar Amounts in Thousands)

Program Component:		FY 1991 Base	FY 1991 Estimate	Inc.(+) or Dec.(-)	Workload Measures
1. State Programs	$	3,105	3,105	---	24 programs evaluated; 35 grants/major amendments awarded; 24 previously awarded grants administered;
	(FTE-T)	61	61	---	
2. Regulation & Inspection	$	16,663	16,663	---	2,500 sampling inspections; 9,750 other inspections.
	(FTE-T)	272	272		
3. Small Operator Assist. Program	$	292	292	---	20 grants reviewed; 20 grants admin.; 20 programs evaluated.
	(FTE-T)	4	4	---	
4. Federally-administered Programs	$	252	252	---	11 programs operated.
	(FTE-T)	5	5	---	
5. Federal lands Programs	$	355	355	---	12 cooperative agreements.
	(FTE-T)	7	7	---	
6. Indian lands Programs	$	231	231	---	3 programs admin.
	(FTE-T)	5	5	---	
SUBTOTAL		20,898	20,898	---	
		354	354	---	
7. Indefinite Appropriations:					
Bond Forfeiture Reclamation (indefinite)		300	300		
Civil Penalty Reclamation (indefinite)		1,200	1,200		
TOTAL		22,398	22,398	---	
		354	354	---	

1. State Programs

OSM's State program assistance staff, located in Headquarters, Eastern and Western Field Offices, and the field offices, are the primary liaison with State regulatory agencies. To increase consistency and efficiency, all OSM operations in a State are coordinated through the Director of the OSM field office. OSM conducts activities in States to meet Federal responsibilities while minimizing interruption to State operations. The most important functions of this program component include: responding to State assistance requests and providing special assistance to address problems; interpreting SMCRA and implementing regulations; reviewing amendments to State programs; preparing and reviewing State program evaluation reports; and providing advice on State operating systems and grant applications.

State Program Amendments

In 1987, the State program evaluation and program amendment processes were enhanced by increasing field office involvement and reducing Headquarters review.

On January 18, 1989 the State program amendment process was further modified to:

- vest primary responsibility for the processing of State program amendments in the Assistant Directors for Field Operations (AD/FO),
- require the AD/FO and the Field Office Director to conduct joint or parallel, rather than consecutive, reviews of both formal and informal submittals,
- change the role of the Assistant Director for Program Policy (AD/PP) from review and surname of final rules to review and comment on both formal and informal submittals, and
- establish time frames as guidelines within which agency actions should be completed.

State Program Evaluation

OSM has developed detailed policies and procedures to direct its staff in conducting oversight. Field offices collect and analyze data and information throughout the evaluation period (July 1 - June 30).

OSM's annual evaluation reports identify both the accomplishments and problems of States in implementing surface mining control and reclamation programs. All issues identified are discussed with the State throughout the evaluation period in an attempt to achieve resolution.

State Oversight

For the 1989 evaluation year, oversight guidance was revised to:

- require that Field Office Directors develop an annual workplan detailing how oversight will be conducted;

- provide increased flexibility with respect to the frequency and detail in which program elements are evaluated;
- define and standardize the program elements subject to oversight;
- improve the conciseness of the annual report, and reduce preparation and review time frames;
- eliminate table driven oversight; and
- introduce the concept of formal concern and issue letters as part of the issue resolution process.

In all program areas, the goal is to encourage field offices to conduct evaluations and investigations as necessary to address problems as they arise or become apparent rather than to postpone evaluation activities or interactions with the State until the end of the evaluation year. OSM is trying to identify ways to deal with issues while they are still in the formative stage. By encouraging field offices to provide summary data and findings to States on a continuous basis, and meet with States on a regular basis, enhanced discussion of issues and resolution of problems is being promoted.

In Fiscal Year 1989 a State-OSM task force examined OSM oversight procedures to develop long term initiatives that would provide OSM with greater flexibility in oversight based upon State performance and management. The task force recommended an emphasis on evaluation of on-the-ground results to measure how States are accomplishing the objectives of SMCRA. Overall oversight would not be reduced, but refocused in a more productive manner to allow greater flexibility in resource allocation. Other recommendations included development of a common data base for use in oversight and encouraging States to develop improved internal controls.

To test the concept, four states (Illinois, Alabama, Pennsylvania, and Wyoming) and their respective field offices were selected to develop oversight workplans incorporating this concept. The prototype program began on July 1, 1989. Each prototype program will be evaluated throughout the evaluation year.

No commitment to adopt these recommendations on a nationwide basis will be made until the results of the prototype program are known and evaluated.

State Bond Program

In 1985-86, a number of surety companies and banks guaranteeing the reclamation of surface coal mining operations were declared insolvent or went into bankruptcy. Some of the insolvencies were caused by mine operator forfeitures. Subsequent to these insolvencies, mine operators experienced problems in obtaining surety guarantees. Small coal operators are increasingly being required to post large amounts of collateral, resulting in cash flow problems. Large operators may not have to post collateral, but are finding surety bonds more difficult to obtain because their total bond amounts are exceeding the underwriting limits of the surety or their own financial assets.

OSM has worked with States, mine operators, and sureties through regulatory action, workshops, and encouragement of alternative bonding programs by State regulators. OSM and State regulations allow alternatives such as cash, collateral, self bonds, insurance, or state bond pools. Eight states currently have established bond pools. OSM has modified its regulations to reinstate phase and incremental bonding. Part of OSM's Fiscal Year 1989 research budget targeted projects intended to address the bonding issue.

Oversight of State bond programs is a high priority. In recent evaluations, procedural problems were found in several States which might have resulted in inadequate bond levels. OSM has taken action to ensure more adequate bonds through tighter, more comprehensive oversight of State bonding requirements in primacy States.

2. Regulation and Inspection

Regulation and inspection is the largest component of the regulatory program operations subactivity. Within this component, staff are responsible for monitoring and evaluating the inspection and enforcement aspects of State regulatory programs. Additionally, staff are responsible for conducting required Federal inspection and reinspection activities.

The following is a summary of the various activities carried out under this component:

- random sampling inspections based on a statistical methodology that allows OSM to assess the extent to which State inspectors are citing violations;
- inspections to provide assistance to States;
- Federal follow-up inspections where the State fails to take action on a particular violation;
- citizen complaint inspections where the State is unavailable in an emergency, or to monitor the State's handling of citizen complaints;
- development of annual reports on States' accomplishments and problems encountered;
- issuance of Notices of Violation (NOVs) or Cessation Orders (COs);
- assistance to States to resolve regulatory program problems; and
- Federal inspections and enforcement actions in States without approved regulatory programs, on Indian lands, and on Federal lands in primacy States without cooperative agreements.

Section 517(a) of the SMCRA requires the Secretary to conduct such inspections as are necessary to evaluate the administration of approved State programs. To implement this requirement, OSM conducts an appropriate number of inspections at mine sites randomly selected in each primacy State. During these sampling inspections, OSM inspectors record the degree of compliance with the State program and determine whether any observed violations were present at the time of the last State complete inspection and whether or not they were cited by the State. If uncited violations are observed, OSM inspectors further describe the violations by specific type, the seriousness, the cause, and determine in subsequent discussions with the State the reason the State failed to cite the violation. Inspection results are compiled and discussed with the State on a frequent basis. This process enables program implementation problems to be resolved at an early stage.

For the 1989 State program evaluation year (July 1, 1988 to June 30, 1989) random sampling inspections comprised 53 percent of the inspections conducted in primacy States. The remaining inspections are comprised of special studies, follow up inspections where ten day notices and enforcement actions have been taken. Additionally, OSM conducts special study inspections. These special studies are selected annually to evaluate critical components of State programs or are conducted in response to suspected problems indicated during the course of random sample inspections.

The projected Fiscal Year 1991 workload includes an estimated 2,500 random sampling inspections (excluding special inspections or case studies and citizen complaints). Numerous inspections are conducted jointly with States. OSM's inspection policy is consistent with Section 201(c)(12) of the Act: "to minimize duplication of inspections, enforcement, and administration of the Act."
In Fiscal Year 1989, with the implementation of the Abandoned Site Inspection Frequency Rule, the number of inspections performed on abandoned coal mine sites was reduced. This resulted in a permanent reduction in inspection requirement and is reflected in this budget estimate.

Each inspection includes a review of the permit prior to the actual on-the-ground inspection. The purpose of the permit review is to familiarize the inspector with any specific conditions of the permit and reclamation plan which may be peculiar to that particular mine before making determinations as to violations of that permit. This allows the inspector to evaluate the State's consistency in applying performance standards and in monitoring reclamation efforts in the field. Each inspection results in a written report explaining site conditions and noting any violations. Inspection data is also entered into the agency Minesite Evaluation and Inspection Report (MEIR) system. Data from oversight inspections is used as part of the overall state program evaluation each year.

When an oversight or citizen complaint inspection reveals possible violations -- other than imminent danger of significant environmental harm or danger to the public which requires immediate issuance of a Cessation Order (CO) -- a ten day notice is issued to the State. OSM tracks the dates that the State's response to the ten day notice is due. All such notices require written responses from the State regarding the actions taken to resolve the alleged violations. A Federal inspection is conducted following a 10-day notice where the State has failed to take appropriate action or to show good cause for its failure to act and there continues to be reason to believe a violation may exist. If the inspection shows that a violation does exist a Federal Notice of Violation is issued.

On July 14, 1988, OSM published a rule which establishes a uniform standard by which OSM will evaluate State responses to ten day notices (55 FR 26728). OSM will accept a State's response as constituting appropriate action to cause a possible violation to be corrected or showing good cause for failure to act unless a written determination is made that the State's response was arbitrary, capricious, or an abuse of discretion under the State program. This rule also established an informal review process for States to use in requesting from the Deputy Director, reconsideration of the Field Office Director's evaluation of the State's response. The rule enhances the cooperative Federalism intended by Congress and further clarifies OSM's role in overseeing the States administration of this regulatory program.

A total of nineteen Ten Day Notice violations were appealed to the Deputy Director during the 1989 evaluation year. These originated from the States of Ohio (8), Utah (3), West Virginia (3), Missouri (2), New Mexico (1), Alabama (1) and Pennsylvania (1). Alleged violations contained in seven Ten Day Notices were affirmed and resulted in Federal inspections; twelve alleged violations contained in twelve Ten Day Notices were reversed.

Additionally, non-oversight Federal inspections are mandatory in primacy States under either of the following circumstances:

- to address a citizen complaint based on information (oral followed by written) that an imminent danger of significant environmental harm or imminent danger to the health or safety of the public exists for which the State regulatory authority has failed or is unable to take immediate, appropriate action; and
- to follow-up on inspections resulting from previous Federal enforcement actions by OSM to ensure that appropriate steps are taken by the State.

The following workload tables show OSM inspection activity by State in FY 1989.

TABLE 4
OSM OVERSIGHT OF STATE REGULATORY PROGRAMS
For July 1, 1988 to June 30, 1989

PRIMACY STATES	SAMPLING INSPECTIONS	OTHERS	NUMBER OF TEN-DAY NOTICES ISSUED	NOTICES OF VIOLATIONS	CESSATION ORDERS
AK	2	0	0	0	0
AL	163	57	7	0	0
AR	12	10	2	0	0
CO	26	2	6	0	0
IL	58	42	26	0	0
IN	197	81	40	0	0
IA	13	1	4	0	0
KS	17	2	2	0	0
KY	432	432	114	9	4
LA	1	1	0	0	0
MD	60	12	0	0	0
MO	43	7	4	0	0
MT	5	0	4	0	0
NM	7	0	2	0	0
ND	4	0	0	0	0
OH	283	68	52	2	0
OK	81	66	15	0	0
PA	350	422	26	1	1
TX	12	3	1	0	0

TABLE 4 (cont.)
OSM OVERSIGHT OF STATE REGULATORY PROGRAMS
For July 1, 1988 to June 30, 1989

PRIMACY STATES	SAMPLING INSPECTIONS	OTHERS	NUMBER OF OSM ISSUED		
			NUMBER OF TEN-DAY NOTICES ISSUED	NOTICES OF VIOLATIONS	CESSATION ORDERS
UT	16	3	13	1	0
VA	298	65	9	1	1
WV	344	467	117	4	3
WY	17	2	1	0	0
TOTALS	2,441	1,743	445	18	9

The above totals do not reflect two-acre task force activities. Other inspections include assistance to the State, citizen complaints, special studies and follow-ups to State and Federal actions.

The total planned inspections to be performed by OSM for Fiscal Year 1991 are as follows:

Sampling Inspections	Indian Mine Inspections	Federal Program Inspections	Others	Federal Lands Inspections	Total Federal Inspections
2,500	125 1/	6,675	2,500 2/	450 3/	12,250

1/ Coal mining on Indian lands occurs in the following States: AZ, MT, and NM.

2/ Includes Two Acre Task Force inspections in Virginia and Kentucky and other oversight inspections.

3/ Federal lands in Kentucky where no cooperative agreement is in effect.

TABLE 5
FEDERAL PROGRAM INSPECTIONS

STATES	1989 FEDERAL* INSPECTION	NOTICES OF VIOLATION	CESSATION ORDERS	PROJECTED INSPECTIONS FISCAL YEAR 1990	FISCAL YEAR 1991
CA	33	4	2	36	36
GA	91	0	0	75	75
NC	9	0	0	12	12
TN	7,441	316	74	6,500	6,500
WA	51	0	0	52	52
TOT	7,622	320	76	6,675	6,675

* These figures include aerial inspections.

** These figures reflect implementation of the Abandoned Sites Rule (ref. modified 30 CFR 840, 842, 843; 53 FR 24872).

The regulation and inspection component also has provisions for addressing citizen complaints. Most citizen complaints received by OSM in primacy States are referred directly to the State agency. However, if upon receipt, evidence is provided that an imminent danger of significant environmental harm or immediate danger to the public exists or if there is indication that the State has been notified in writing and has failed to take appropriate action, then OSM will immediately conduct a Federal inspection pursuant to Section 521(a)(1). The designated State official will be notified of this action prior to the inspection. The citizen complainant will be notified and given the opportunity to accompany the inspector if a Federal inspection is to be conducted.

In States that do not have an approved regulatory program, on Federal lands within primacy states without cooperative agreements, and on Indian lands, OSM will continue its direct inspection, enforcement, assessment and collection activities. The regulated facilities on Federal lands in those States that have cooperative agreements with OSM will be subject to OSM oversight inspections similar to those done on non-Federal lands.

In Fiscal Years 1990 and 1991 OSM will continue implementation of the Federal program in Tennessee which has been in place since October 1, 1984, when the State relinquished primacy. OSM will also continue implementation of Federal programs in Washington and California and on a coal exploration site in North Carolina, and on Indian lands.

Two Acre Sites

OSM has addressed two-acre exemption sites in Virginia and continues to do so in Kentucky (pursuant to a 1985 Settlement Agreement). OSM completed its survey and developed inventories of mine operators claiming the two-acre exemption in Virginia and Kentucky, and reported its findings to the Court on October 6, 1985. OSM has been filing quarterly reports with the Court which detail the number of inspections made, the number of violations issued, Court referrals, and abandoned mine land fees owed.

Virginia Two Acre Sites: During the initial efforts to evaluate the two acre exemption sites in Virginia, 1,073 sites were identified. As of August 31, 1988, OSM had conducted inspections on all of these sites, had conducted 1,344 follow-up inspections, and had issued 258 notices of violations citing 640 violations; 120 cessation orders citing 268 violations; and 395 ten-day notices. OSM took direct responsibility for inspection and enforcement activities, since the majority of sites involved dated back to the interim program period. In Fiscal Year 1988, all initial site inspection actions in Virginia were completed.

Inspection efforts in Fiscal Year 1989 consisted of continuing follow up inspections on those sites where violations were previously cited; 373 follow up inspections were performed, 4 additional cessation orders written. Several major coal companies have entered into settlement agreements, which have resulted in the reclamation of 93 two-acre sites. A total of approximately 800 additional follow-up inspections are projected, which will take approximately 3.5 man years to complete.

Kentucky Two Acre Sites: A total of 1,700 initial and follow up Federal inspections have been completed on two acre sites in Kentucky. OSM has issued a total of 93 imminent harm and 41 failure to abate cessation orders with 29 outstanding actions referred to the Field Solicitor for alternative enforcement.

Since July 1988, two acre inspection assignments have been based upon computer generated lists of companies/individuals associated with the greatest number of two acre permits or highest potential for "worst case" abusers. Since that time 117 Federal cessation orders have been issued based upon established "chain" relationships. A total of 2,171 permits remain on the two acre inventory in Kentucky. Based upon available inspection resources, completion of the initial inspection of the above permits should be accomplished by January 1991. Completion of follow up inspections required by OSM enforcement actions will take approximately two additional years, but with a substantially reduced staffing level. A total of 277 two acre sites have been reclaimed, as a result of combined State and Federal efforts.

OSM has been conducting extensive oversight activities to ensure that regulatory compliance and enforcement action is initiated when violations of the regulatory requirements are identified. While OSM has responsibility for inspection and enforcement activities, the State will continue to follow through on enforcement actions of any previously cited violations. Recent legislation that deleted the two-acre exemption from SMCRA (Public Law 100-34) will ultimately eliminate the need for the two-acre inspection program.

Bond Forfeiture

With respect to bond forfeiture problems in Kentucky and Virginia, OSM provides for the inspection of the mine sites, and determines whether OSM or the State is responsible to take actions that will assure compliance. Many of the mine sites in question are interim program sites, and the majority of bonds released by States have been interim program bonds as opposed to permanent program bonds. In addition, OSM examines bond forfeiture records and inspects sites on a priority basis, if it is determined that the State is not responsible for the inspection. Furthermore, to avoid systemic problems that could cause States to release bonds prematurely, OSM assesses a sample of bond release applications received by States by conducting inspections on a joint basis with States, or without them if they choose not to participate.

3. Small Operator Assistance Program (SOAP)

States with coal mining within their borders have programs to assist operators of small mines. An eligible small mine operator is one whose actual and attributed coal production does not exceed 100,000 tons per year. OSM provides policy direction and programmatic assistance to States with primacy that participate in the nationwide small operator assistance program (SOAP). In addition, OSM provides SOAP grants to the States from the Abandoned Mine Reclamation Fund (AML) appropriation to pay for hydrologic/geologic studies and for laboratory analyses of water and core samples required for permitting purposes. To date, over 2,270 small operators have been assisted with SOAP grants.

OSM conducts an annual evaluation of each State's SOAP to assess program effectiveness. The review includes the evaluation of eligibility determinations, efforts to inform potential small operators about possible assistance, data management, and contracting procedures. Evaluations are based on reports and other information submitted by States, and on limited mine site visits.

4. Federally-Administered State Programs

Section 504 of SMCRA requires that a Federal program be implemented in a coal-producing or a coal-exploration State which does not submit a regulatory program or fails to have its program approved. Federal programs continue to be implemented in California, Georgia, Idaho, Massachusetts, Michigan, North Carolina, Oregon, Rhode Island, South Dakota, Tennessee and Washington.

Federal regulatory programs apply applicable standards of 30 CFR Chapter VII to surface coal mining, reclamation operations, and coal exploration operations in the State. OSM is the regulatory authority and performs all functions necessary to ensure successful implementation of the Federal program in the State. The Federal program would shift to oversight activities when primacy is granted to non-primacy States.

5. Federal Lands Program

This program component includes negotiation and monitoring of cooperative agreements with primacy States to regulate coal mining on Federal lands. The

Secretary retains certain non-delegable responsibilities on Federal Lands, including approval of mining plans under the Mineral Leasing Act, and designation of certain lands as unsuitable for surface coal mining. This component also includes direct OSM regulatory activities on Federal lands in States without cooperative agreements. Federal financial assistance to the States for implementing cooperative agreements is funded from the State regulatory program grants activity.

Twelve States have entered into cooperative agreements with the Secretary. These are: Alabama, Colorado, Illinois, Montana, New Mexico, North Dakota, Ohio, Oklahoma, Utah, Virginia, West Virginia, and Wyoming. The State of Oklahoma, as of October 11, 1989, became the twelfth and latest State to obtain a cooperative agreement with OSM to regulate Federal lands within its borders.

6. Indian Lands Program

OSM is the sole regulatory authority on Indian lands for surface coal mining because SMCRA does not allow for either State or Tribal regulation of those lands. Three tribes (Hopi, Navajo, and Crow) now have coal mining activity on their lands (Hopi/Navajo - five permits and six inspectable units, total; Crow - one permit and one inspectable unit).

Direct costs for inspecting mines on Indian lands are included in the Regulation and Inspection component. The Indian lands component includes: the Federal cost for negotiating and monitoring cooperative agreements with the tribes; preparing or reviewing any pertinent regulations, legislative proposals, or reports; and maintaining a staff to coordinate OSM activities with the individual tribes. Funding for cooperative agreements with the tribes in FY 1989 was provided to the Hopi and Navajo tribes for their participation in the preparation of an Environmental Impact Study (EIS) for the Black Mesa/Kayenta mine. The Black Mesa/Kayenta EIS should be completed in Fiscal Year 1990, therefore no Title V funding is expected to be distributed to the Tribes in Fiscal Year 1991. These funds are included in the State regulatory program grants activity.

7. Bond Forfeiture and Civil Penalties (Indefinite Appropriations)

OSM has two indefinite appropriations that provide funds for the reclamation of post SMCRA abandoned or unreclaimed mine sites.

The bond forfeiture appropriation is used to reclaim lands where the bond was forfeited and OSM is the regulatory authority. Utilizing the forfeited funds, OSM issues and administers contracts for reclamation which is to be performed in accordance with the mining plan developed during the permitting process. In Fiscal Years 1988 and 1989, OSM obligated $276,539 for bond forfeiture reclamation projects. In both Fiscal Years 1990 and 1991, bond forfeiture receipts and expenditures are projected to be $300,000 annually.

The Fiscal Year 1989 appropriations language provided that the Secretary may utilize directly or through grants to States money collected in Fiscal Year 1989, pursuant to the assessment of civil penalties under Section 518 of the Surface Mining Control and Reclamation Act of 1977, to reclaim lands adversely affected by coal mining practices after August 3, 1977. In Fiscal Years 1988 and 1989, OSM awarded $1,004,583 in grants for civil penalty projects. These funds were used on projects in primacy States where bond forfeitures were insufficient to accomplish the required reclamation. In both Fiscal Years 1990 and 1991, receipts and expenditures for this program are projected at $1,200,000 annually.

Justification of Program and Performance

Activity: Federal Regulatory Programs
Subactivity: Kentucky Settlement Agreement

(Dollar Amounts in Thousands)

	FY 1990 Enacted	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From 1990	Inc. (+) Dec. (-) From Base
Kentucky Settlement Agreement					
($)	3,772	3,772	1,109	-2,663	-2,663
(FTE-T)	---	---	---	---	---

Authorization: 30 U.S.C. 1252, 1253, 1254, 1273, 1300, 1302 (Sections 502, 503, 504, 523, 710 and 712); Public Law 95-87 (Surface Mining Control and Reclamation Act of 1977).

Objective: Provide financial and technical assistance to Kentucky in order to assist the State with improving its regulatory performance pursuant to a Memorandum of Understanding (MOU) between the Office of Surface Mining Reclamation and Enforcement (OSM) and the State. The MOU also specifies requirements to address issues raised in the settlement agreement, which results from civil action filed against the State by the National Wildlife Federation.

Base Program:

This subactivity was established in Fiscal Year 1988 in response to settlement of a civil action filed against the Commonwealth of Kentucky by the National Wildlife Federation. While OSM was not a party to the civil action, the settlement agreement required OSM and Kentucky to work together to resolve issues stemming from the civil action and the agreement itself. OSM and Kentucky signed a Cooperative Agreement in February 1988 which details the terms for carrying out the settlement agreement. Under the cooperative agreement, OSM will provide financial and technical assistance to Kentucky in order to assist the State with improving its regulatory performance. OSM is also responsible for tracking the progress of the settlement agreement and managing the Commonwealth of Kentucky portion's of the cooperative agreement.

The entire effort provides for a one-time plan of financial and technical assistance to Kentucky over a period of four fiscal years. Fiscal Year 1991 marks the fourth and final year of the plan. The agreement is scheduled to terminate in mid-Fiscal Year 1991. Funds are provided directly to the State and to contractors under OSM's direction. The agreement provides a framework for the State to ultimately improve its ability to carry out its responsibilities in such areas as inspection and enforcement, regulation of two-acre sites, bond release, and wildcat mining. OSM believes that the plan provides a tangible and lasting resolution to critical issues facing Kentucky's program. The State and the OSM will be able to ensure that coal mining occurs in an environmentally acceptable manner, pursuant to the mandate of SMCRA.

The following is a brief summary of the areas in which the State and OSM are concentrating their efforts:

Computer Tracking - This includes design, implementation, and enhancement of new and existing ADP systems required in the settlement agreement and continued maintenance and update of information systems.

Inspection - This includes the conduct of field inspections and keeping of records associated with interim permits, on-site construction exemptions, and exploration notices.

Aerial Overflight - This includes aerial inspection and visual record of 1,800 permanent program permit sites per year.

Legal Enforcement - This includes taking appropriate enforcement actions for all documented violations under the settlement agreement.

Wildcatting - This includes formation and operation of a task force to address mining without a permit or wildcatting. It also includes enhancing the program with additional personnel and equipment.

Since September 30, 1989, the ending date of the seventh quarterly report, many of the required tasks were well underway and/or completed. OSM and Kentucky have continued to make a good faith effort at fulfilling the agreement. The following is a list of some of the accomplishments under the settlement agreement during this period.

- All surface coal mining operations will have been overflown, videotaped, and evaluated under the Aerial Overflight Program by mid-Fiscal Year 1990. The process set up for this program is working to produce a usable photographic record of all permanent program permits. Kentucky will then conduct re-flights of all active surface coal mining operations. As of September 30, 1989, 2,324 (65%) of an estimated 3,600 permanent program permits had been overflown and videotaped, using 672 hours of helicopter time. The overflights have resulted in over 1,264 on-the-ground inspections and the issuance of 443 notices of non-compliance.

- Part I of the settlement agreement requires a one-time inspection of all bonded interim program sites. These inspections are designed to ensure that all violations are cited and site conditions are photographed. Kentucky's inventory currently contains 1,193 interim program sites. All of the 1,193 (100%) sites have been inspected. These inspections have resulted in the issuance of 128 notices of non-compliance. A review of 59 files revealed that 21 sites were found to possibly require enforcement action. These sites are under discussion. The outcome should be known during the eighth quarterly review. In addition, OSM reviewed 40 Part I inspections in the field. The result of these inspections found that all necessary actions had been taken by the State.

- All computer tracking systems have been completed and are operational.

- As of September 30, 1989, 78 FTEs assigned specifically to implement the settlement agreement were filled under the cooperative agreement.

- Recently Kentucky reported that 1,629 bond releases had been approved and photographed. OSM had reviewed 66 (31 complete and 35 partial) bond release files to determine if photographs were taken and properly documented. All 66 bond release files reviewed contained appropriate information. The reviewed photographs were found to demonstrate compliance with the requirements of this part of the settlement agreement.

- Recently, Kentucky reported that 1,727 (99%) of the 1,743 Failure to Abate Cessation Orders (FTACO) in effect at the start of the settlement agreement had been inspected and photographed. OSM reviewed 46 FTACO files to determine if the unabated violations had been inspected, photographed, and a record established. All 46 FTACO files reviewed contained appropriate information.

- Extensive training is being provided to all Kentucky Regulatory Authority employees.

- The bond release training requirement was completed. Eight courses were held between April and September 1989, with 175 DSMRE employees attending.

- Reviews of all on-site construction exemptions inspected were conducted and completed during the quarter ending September 30, 1989. A list of sites where possible enforcement action is needed was developed with final actions expected during the next quarter ending December 31, 1989.

- As of September 30, 1989, efforts under alternative enforcement actions achieved reclamation activity on 12 sites.

- The Investigative Staff assigned to the Department of Law completed 359 ownership and control reviews and 526 asset checks through September 30, 1989.

The Cooperative Agreement contains four Memoranda of Agreements (MOAs). These MOAs were negotiated and signed to further assist the State in implementing the settlement agreement. The following is a summary on the status of those MOAs:

- MOA with the Department of Information Services - This MOA provides for computer enhancement activities related to the Surface Mining Information System (SMIS) to be performed by the Department of Information Services. The Department is currently working on enhancements that would provide management information concerning inspection and enforcement activities. This system will ultimately provide an accurate computerized inventory of surface coal mining and reclamation activities within the State.

- MOA with the Division of Administrative Services - Most of the work under this MOA has been completed. This MOA solicited the assistance of the Division of Administrative Services to meet the requirements for tracking alternative enforcement actions. A small number of refinements is in progress.

- MOA with the Department of Military Affairs - Services provided under this MOA include maintenance and pilot services for the helicopter. The hourly operating rate for helicopter service is $300.00 an hour as originally contained in the MOA.

- Eastern Kentucky University - This MOA provides necessary training needed to enhance the skills of State personnel to carry out the settlement agreement. An amendment has been approved to add $100,000.00 to the MOA for additional courses for State personnel.

By September 30, 1989, Kentucky's staffing profile indicated that there were 437 FTEs on board under the State's Administration and Enforcement Grant and 78 under the State cooperative agreement.

(Dollar amounts in thousands)

Decrease for Fiscal Year 1991	1991 Base	1991 Estimate	Dec. (-)
($)	3,772	1,109	-2,663
(FTE-T)	---	---	---

The decrease reflects planned reductions in funding requirements in Fiscal Year 1991, the fourth and final year of support under the plan. The settlement agreement is scheduled to terminate in mid-Fiscal Year 1991. The Fiscal Year 1991 budget request will provide funding to support four months of continued operation and phase down activities associated with the agreement. The majority of the decrease (-$1,613,000) is attributable to reduced personnel and benefits costs and indirect charges. OSM anticipates that the two studies (hydrology and acidity) and the bond release training effort will be funded in Fiscal Year 1990, representing a decrease of $200,000 in Fiscal Year 1991. In addition, contractual services are expected to decline by $850,000.

The entire decrease will be applied to object class 25, Other Services.

Justification of Program and Performance

Activity: Federal Regulatory Programs
Subactivity: Technical Services, Training, and Research

(Dollar Amounts In Thousands)

	FY 1990 Enacted	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From 1990	Inc. (+) Dec. (-) From Base
Technical Services, Training, & Research					
($)	13,026	13,243	13,243	+217	---
(FTE-T)	174	174	174	---	---

Authorization: 30 U.S.C. 1252 et. seq. (Sections 502, 522, 523, 705(b), and 712(c) Surface Mining Control and Reclamation Act of 1977).

Objectives:

1. Provide scientific/engineering support and technical training to States operating approved permanent programs and Federally administered programs.

2. Initiate research projects and technical studies, issue technical publications, and approve experimental practices to meet the needs of approved State programs and Federally administered programs.

3. Provide technical documentation and expert technical witnesses capable of supporting the Secretary in litigation related to SMCRA programs.

4. Analyze State programs for compliance with technical provisions of the approved programs.

5. Process permit applications and mine plans for mining on Federal lands, Indian lands and in States with a Federally administered program.

6. Provide technical review of petitions to designate lands unsuitable for surface mining.

7. Provide technical support in completing reviews and revisions to regulations.

8. Prepare environmental impact statements (EISs) and environmental assessments (EAs) for permits, regulations, and other Federal actions.

9. Provide assistance with permit and mine plan review for the Federal program in Tennessee.

Base Program:

The Surface Mining Control and Reclamation Act (SMCRA) is one of the most technically explicit statutes enacted in history. SMCRA requires OSM to establish nationwide environmental protection standards for mining and for post mining reclamation of lands. Strong and specialized technical support is essential in ensuring that these standards are effective and appropriate, and are based on sound and current technical expertise.

Carrying out the intent of SMCRA requires continual evaluation and interpretation. OSM's technical support staff provide scientific, engineering, and technical assistance to States with approved programs as well as to OSM inspectors and other staff engaged in overseeing State programs and managing Federally administered programs. Technical staff provide technical training to educate personnel whose jobs are related to SMCRA. Technical specialists provide assistance in support of agency enforcement actions and serve as expert witnesses during litigation related to SMCRA and enforcement of its regulations.

Staff also manage and conduct applied research, as well as studies and experimental practices on new and innovative reclamation technologies. OSM scientists also work with industry to resolve technical issues regarding permit or operational problems.

Technical staff develop NEPA compliance documents and other studies assessing environmental effects of SMCRA decisions, and evaluate petitions for unsuitability of lands for mining.

Technical staff are also essential in the development of regulations and the assessment of State program technical provisions to ensure consistency with the Act.

The complex nature of the environment, coupled with the wide diversity among the States in climate, topography, and geology requires that OSM provide a multi-disciplinary professional staff who can solve problems related to the environmental effects of mining. Technical staff are included in the following locations: Headquarters; Knoxville, Tennessee; Denver, Colorado; and Pittsburgh, Pennsylvania. Technical staff cover a broad range of technical disciplines, including geology, hydrology, mining and civil engineering, economics, environmental science, biology, agronomy, forestry, and geochemistry.

SMCRA encourages a productive balance between man and the environment. The law intends for coal production to continue to meet the energy needs of the nation. While it is important that OSM decisions prevent the abuse of America's lands during coal mining, OSM decisions should not place unnecessary regulatory burdens on industry. A technical staff is in place to ensure this balance.

TIPS

In Fiscal Year 1989, extensive progress was made in full implementation of the Technical Information Processing System (TIPS). TIPS is an ADP system that provides a comprehensive set of automated, technical and analytical tools to assist States' reviews of mining permits, reclamation plans, environmental assessments and to assist States in the conduct of other scientific and technical evaluations necessary for administration of SMCRA.

Using commercial off-the-shelf software, TIPS was designed to perform a number of automated operations that were previously handled manually. Examples of these operations include surface and ground water modelling calculations, blasting impacts, AML project evaluation and design, earth volume calculations for bonding and reclamation, spoil and coal waste disposal, etc. TIPS software also allows graphic visual presentations of complex scientific analyses suitable for public forums, congressional briefings, and technology transfer.

The States have already seen significant savings in terms of man hours necessary to complete basic analyses required to implement SMCRA. For instance, a typical water quality analysis took an average of 80 hours to complete using non-automated methods. Using the TIPS technology, time was reduced to two hours. Evaluating reclamation feasibility required an average of 480 hours to complete before TIPS was introduced; now it takes an average of 80 hours. Completing a slope stability analysis using TIPS software (SB-Slope) has been reduced from 40 to two hours.

In 1990, OSM will install additional TIPS work stations to complete installation in all of the primacy States.

One of the most important tasks to be completed in Fiscal Year 1990 is the continued in-depth technical training provided by OSM technical staff to the TIPS users on the use of the Geologic Surface Modeling (GSM) and the Geographic Information System (GIS); this software is critical to the application of highly sophisticated technologies to complex mining applications. Significant training will still be required in 1991 to keep abreast of state-of-the-art technical advancements in these programs as well as other TIPS software applications.

TIPS provides OSM and the States with the tools to evaluate technical issues in greater depth than ever before, and also assists in producing better solutions and recommendations to technical problems.

Program Components.

In FY 1989, OSM performed a complete review of technical staff activities. The FY 1991 funding request is based on actual and projected program activity levels. A comparison by program element of the Fiscal Year 1991 base to the Fiscal Year 1991 estimate is presented below:

Program Component		FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-)
1. Technical advice and assistance on regulatory programs	$(000s) FTE-T	1,975 46	1,975 46	--- ---
2. Technical input for State program evaluation	$(000s) FTE-T	442 11	442 11	--- ---
3. Judicial and administrative proceedings	$(000s) FTE-T	406 6	406 6	--- ---
4. Applied research and technical studies program	$(000s) FTE-T	1,347 13	1,347 13	--- ---
5. Experimental practices program	$(000s) FTE-T	104 3	104 3	--- ---
6. Technology transfer and publications	$(000s) FTE-T	278 5	278 5	--- ---
7. Environmental and economic analysis	$(000s) FTE-T	567 10	567 10	--- ---
8. Outcrop and underground fire control	$(000s) FTE-T	107 1	107 1	--- ---
9. Permit application and mining plan review	$(000s) FTE-T	6,457 62	6,457 62	--- ---
10. Technical training	$(000s) FTE-T	1,560 17	1,560 17	--- ---
Subactivity Total	$(000s) FTE-T	13,243 174	13,243 174	--- ---

1. Technical Advice and Assistance on Regulatory Program Operational Problems

States cannot staff the wide range of technical disciplines necessary to address all of the technical problems which arise during implementation of SMCRA. Therefore, OSM employs technical specialists in Eastern and Western Field Offices to solve technical problems for the States and the OSM field offices. The presence of this technical support ensures consistent resolution of technical problems on a nationwide basis.

Staff in this component provide technical advice to inspection and permitting staff on program evaluation issues and assist in the resolution of operational issues identified in evaluation reports. Technical staff also provide Federal technical assistance to OSM personnel and States in support of inspector findings, solutions to permitting problems, and current and effective methodology on mining and reclamation.

Technical outreach provides guidance from a variety of scientific disciplines to address the complex mining and reclamation aspects of SMCRA. Typical issues requiring assistance are: subsidence control, surface and ground water quality and quantity protection, prime farmland restoration, excess spoil and coal waste disposal, toxic material handling, bond setting and forfeiture, post-mine land use, and revegetation.

In delivering technical assistance, mine sites are assessed, sampling and testing performed, calculations made, and recommendations provided to States, OSM, industry and public interest groups. Citizens' complaints are also evaluated to resolve disputes over mining related incidents that affect the environment, health, safety and/or property of the public.

Staff also assist in the technical support of the Small Operator Assistance Programs (SOAP). The SOAP program applies to operators who produce less than 100,000 tons of coal annually. These operators receive financial assistance to meet data requirements for new mining permits.

In FY 1991, technical staff will continue to provide the States with conceptual and practical training on TIPS operations. Through continued interaction of State and OSM technical staff, TIPS implementation will facilitate the growth in technical analytical capabilities in State regulatory programs.

2. Technical Input for State Program Evaluation

OSM conducts an annual evaluation of each State's performance in carrying out its approved program requirements. Technical staff located in Pittsburgh and Denver assist in these evaluations by performing technical reviews and providing expertise to ensure the consistent application of SMCRA. In this capacity, specialists review technical topics such as bonding adequacy, hydrologic protection, subsidence control, revegetation success, spoil and coal waste disposal, etc. These reviews often result in improved relationships between the States and OSM as issues and problems are resolved and State programs are improved.

Technical staff assist States in correcting deficiencies identified as a result of OSM's oversight function. In addition, field offices routinely identify and study special programmatic technical issues. These studies are designed to improve the overall technical capability to implement State programs. In FY 1989, technical staff evaluated issues on bond pool adequacy in Ohio, spoil fill construction in West Virginia and Kentucky, and subsidence in Kentucky. Studies in Fiscal Year 1990 will be determined as States' needs are determined.

The technical assistance component allows OSM to make wise decisions in carrying out its mission of protecting the environment. The requested funding for this area will strengthen the quality and consistency of OSM's oversight role and will continue to assist in the correction of technical problems uncovered during OSM evaluations of State programs. Without the availability of technical staff to solve problems and provide technical advice, oversight will be incomplete and inconsistent.

3. Judicial and Administrative Proceedings

Within this component, OSM specialists appear as expert witnesses at Administrative Law Judge (ALJ) hearings and develop technical documents that are used in administrative proceedings before the Office of Hearings and Appeals (OHA). OSM technical staff also assist in State administrative proceedings. The following activities are performed in relation to judicial and administrative proceedings:

(1) review of the statutory and regulatory basis for disputed regulatory or State program issues;

(2) review of engineering and other technical literature;

(3) analysis of alternative technical and regulatory solutions to issues presented;

(4) formulation of legally defensible positions which can withstand technical scrutiny; and,

(5) detailed technical analysis, sampling and testing, exhibit preparation, testimony rehearsals and other case preparation activities.

Technical staff regularly testify in Federal court hearings seeking injunction or appeal from administrative actions. In FY 1989, OSM faced an increased workload resulting from Federal district court actions or the threat of court actions. Much of this workload increase is due to the preparation of technical testimony.

Technical staff provide assistance during the life of the court cases; also, when the cases end in settlement agreements, technical staff provide ongoing assistance to assure full compliance with the terms of the agreements.

Funding in this area ensures that legal defense is based on accurate technical information and that the U.S. government is represented with sound and current technical expertise.

4. OSM Applied Research and Technical Studies Program

A sound research program ensures that the most current and valid scientific information is available to solve technical regulatory issues and to support OSM's mandate to provide technical assistance to the States. OSM's applied research program seeks to serve the needs of State program administrators, Federal enforcement personnel, U.S. citizens, and the coal industry by solving problems related to regulatory implementation and compliance. This component provides support in the following program areas: a) applied research; b) re-mining initiatives; c) computer assisted library search services, and; d) special technical studies.

a. OSM Applied Research Program

Technical studies provide OSM with tools to resolve technical regulatory issues. They also foster the development of improved methods of mining and reclamation that enhance environmental protection while reducing the burden on the coal mining industry. Each year, OSM selects study priorities, based on input from OSM staff, the States, industry, and the environmental community. All topics reflect national priorities. In FY 1990, research funds will be applied to ongoing studies such as the following:

- o development of productivity indices to estimate crop productivity on reclaimed lands;
- o development of improved methods to evaluate the physical, chemical, biological and mineral factors which influence the acidity/alkalinity of soil overburden materials;
- o review and evaluation of the Federal guarantee for reclamation, liability periods for revegetation, and possible approaches to increase reclamation bond availability.

In selecting the above study topics, emphasis was placed on developing new and improved ways to identify and evaluate potential mining and reclamation problems. Results will serve industry as well as the regulatory authorities by helping to solve the most pressing problems currently experienced in their ongoing efforts to protect the environment.

Staff in Headquarters continually monitor research activities of other Federal agencies and private entities to prevent duplication of OSM research and to ensure that OSM is kept up to date with the most current research findings. In particular, staff work closely with Bureau of Mines research related to abandoned mine lands reclamation.

OSM, the States, the environmental community, and the coal industry are all in agreement that specific new research is needed to solve new and recurring regulatory and reclamation problems. New studies are needed to produce better designs, regulations, and environmentally sound permit reviews that will improve mining and reclamation techniques. The wide diversity among the States in climate, topography, and geology requires that OSM manage this research to ensure that the broadest, most appropriate approach is taken. In choosing FY 1991 research topics, the selection committee will focus on new and improved ways to identify and evaluate potential mining and reclamation problems. FY 1990 funding for this component will allow for the continuation of studies awarded in FY 1988, 1989, and 1990.

b. Remining Initiatives

Remining is one of the most attractive alternative mechanisms for reclaiming land areas disturbed by past coal mining activities. Remining is defined as the re-affecting of mine land areas which either have not been reclaimed or have been reclaimed, but not in accordance with current State or Federal reclamation standards. The purpose of remining is to (1) maximize the recovery of the nation's coal resources, (2) reclaim abandoned mine land areas and previously reclaimed areas not meeting current reclamation standards, and (3) improve the environmental quality of both the reclaimed and the surrounding area.

OSM strongly supports remining as a viable approach to the reclamation of abandoned mine land areas or inadequately reclaimed areas. Thousands of acres of abandoned and unreclaimed mine lands contain economically recoverable coal reserves; however, existing regulatory barriers deter the use of remining to reclaim these areas. Industry's key concern deals with the reclamation performance standards which require active mine operators, engaged in remining work, to comply with SMCRA's permanent regulatory program and whether pre-existing abandoned mine land conditions are reflected in those standards. The primary problem with remining is preexisting acid mine drainage and other environmental problems for which the operator doing the remining may become responsible.

OSM has actively sought to develop and implement pertinent national strategies to promote and expedite the mining industry's continued and increased involvement in remining. While section 19, Coal Remining Operations, of the 1987 amendments to the Clean Water Act reduced operators' post-remining responsibility, further barriers to remining exist.

In Fiscal Year 1991, OSM technical staff will seek to promote initiatives which provide incentives for the reclamation of abandoned mine lands through remining. OSM emphasis has been on financial motivation, rather than environmental standard relaxation, to ensure a responsible approach to environmental protection while accomplishing reclamation. OSM technical staff work with the States who are developing and implementing legislation to promote and encourage the reclamation of abandoned mine land areas through remining. In some States, development of these initiatives is only in the planning stages while other States have submitted formal remining amendments. Technical staff will work to provide sound technical advice, assistance, and research in this major effort to expand remining.

c. Computer Assisted Library Search Services

OSM technical and program staff currently receive research support through the COALEX, LEXIS, NEXIS and NERAC data banks. COALEX, LEXIS and NEXIS information systems are furnished by contract with Mead Data Central Computer Search Services. NERAC is a new service added at the beginning of Fiscal Year 1990.

COALEX, LEXIS and NEXIS information systems provide searches to yield complete and accurate data in a matter of minutes. They eliminate the need for staff to manually search through volumes of documents. OSM staff perform over 6,000 searches per year to conduct various types of research. OSM staff use COALEX for research related to promulgating and implementing the regulatory program mandated by SMCRA. Program staff also conduct COALEX searches to prepare the defense of surface mining litigation before the District Court and Appellate Courts. COALEX contains the full text, amendments, and legislative history of SMCRA. The system also contains all of OSM's past and present regulations as well as all past and present statutes and regulations constituting OSM-approved State programs. In addition, COALEX holds OSM Federal Register notices and all OSM related decisions on administrative appeals. The system also contains all current OSM directives.

Typical COALEX research applications are:

- to ensure regulatory consistency by comparing provisions approved by OSM for one State to those approved for another;
- to ensure adequacy of State regulatory programs by comparing provisions of State programs to OSM's rules;
- to verify the internal consistency of OSM rules by examining rule history and preamble language.

The new computer assisted library search service (NERAC) is provided through a contract with NERAC, Inc. services. NERAC operates in cooperation with NASA to disseminate and utilize global technologies. Their extensive database resources are drawn from U.S. government agencies, professional associations, and research and academic societies worldwide. The service will provide OSM technical and program staff with technical data and findings from studies conducted worldwide. Cost for NERAC services is approximately $6,000 annually.

Examples of anticipated NERAC use include:

- keeping informed of changes in mining and reclamation technology (NERAC systems report new developments daily);
- streamlining mining and reclamation research efforts by identifying alternative methodologies and materials, sources and applications; and
- investigating mining and reclamation research reports, patents, papers, and research already in progress.

d. Special Technical Studies

OSM technical staff conduct a wide variety of short and long term technical studies in response to specific needs of States and Federal regulatory personnel. Typical studies conducted in the past include Federal and Indian lands regulatory compliance studies, where analyses were performed to ensure compliance with SMCRA and the National Environmental Protection Act. (NEPA).

In FY 1989, technical staff performed an evaluation of the coal reserves of the New River Gorge National River and Chaco Canyon National Park in New Mexico. The purpose of the studies were: 1) to provide the National Park Service with an overview of remaining minable coal deposits that will assist in their land acquisition efforts; and 2) to update the coal reserves for an OSM assessment of the impact of the then proposed Valid Existing Rights (VER) rule.

OSM anticipates that technical resources will continue to focus on the VER issue. VER is not defined in SMCRA; OSM has been attempting to provide a definition since 1979. The most recent proposed rule establishing VER was withdrawn in July 1989, to allow for more careful review of the issue. The issue centers around how to best safeguard the property rights of people who own mineral rights inside the boundaries of specially protected areas, while continuing to prevent coal mining in the national park system.

Until VER is defined, technical staff will provide assistance in the review of the overall VER issue. Staff will collect and analyze data as needed to assess the effects of proposed VER options on the sensitive areas designated by Congress as being protected from surface coal mining. Evaluations will encompass the general effects of VER alternatives as they relate to the nation as whole. Once a VER definition is developed, technical staff will focus on studying the effects of the chosen definition on specific areas.

In FY 1988 and 1989, technical staff conducted a regulatory impact analysis and the environmental impact statement for OSM's rulemaking on subsidence and valid existing rights. Work on this major regulatory action will continue through FY 1991.

5. Experimental Practices Program

SMCRA provides an opportunity for coal mining operators to be innovative in achieving compliance with environmental protection performance standards. Experimental practices, designed by operators, are intended to encourage advances in mining and reclamation technologies.

OSM encourages experimental practices as a means of demonstrating the effectiveness and economic feasibility of new mining and reclamation practices or to provide innovative post-mining land use alternatives.

Generally, an experimental practice is initially proposed and developed by the mining operator and submitted to OSM, through the State, as an alternative way to meet a regulatory requirement. Experimental practices must be approved by the State regulatory authority and OSM. The proposal must be at least as environmentally protective as the environmental protection performance standards from which a variance is being sought, and potentially more environmentally protective than those standards.

OSM technical staff provide assistance in all phases of experimental practices. OSM encourages applicants and States to discuss potential experimental practices with OSM technical staff prior to submitting their applications. These discussions identify problem areas that if uncorrected could be the basis for application denial.

OSM technical staff evaluate proposals to determine whether they meet regulatory criteria. Where the State is the regulatory authority, OSM must also review and approve the proposal; however, the State may submit the application to OSM for a simultaneous review. OSM review of the proposal, including field inspection, usually takes three to five months. If approved, the proposal is monitored by a third party during its implementation. This provides an independent evaluation to ensure environmental harm does not occur. Once an experimental practice is completed, technical staff perform a study to determine how the results impacted the regulatory program. In order to adequately document experimental practice efforts and inform industry about their results, technical staff monitor and analyze projects and produce reports and case study summaries on the various techniques used. To increase industry's awareness, OSM distributes pamphlets describing successful experimental practices.

This program is an effective way to develop more efficient and economical methods to meet regulatory requirements. A recently completed experimental practice in Indiana successfully demonstrated that a coal waste disposal area (slurry impoundment) can be reclaimed as wetland, capable of supporting a diverse vegetative cover for wetland wildlife habitat, without being covered by the required four feet of non-toxic, non-combustible material. The permit provided for a variance from the regulations requiring the covering of toxic and/or acid forming coal waste materials with four feet of non-toxic material. Because of this experimental practice success and the encouraging results of two similar experimental practices underway in Illinois, OSM is encouraging additional demonstrations of this experimental practice concept in other States where site conditions differ. This is one way in which OSM supports the President's goal of no net loss of wetlands.

In order to encourage more innovation, OSM will propose demonstration of technologies which have been developed in the Title V research program. By having coal operators either work directly with technical staff or demonstrate their own ideas, OSM hopes to use the experimental practices program to accelerate the introduction of lower cost mining and reclamation techniques which meet performance standards.

6. Technology Transfer and Publications

This component provides professional assistance in the writing, editing, design, printing, and distribution of OSM publications for technical or general audiences. These publications are designed to assist in the understanding of statutory and regulatory requirements, and to disseminate technical methods for achieving the mission of SMCRA. This is accomplished through a variety of activities: OSM participation in technical meetings, including providing speakers and display booths; publication and distribution of technical reports; sponsoring professional meetings; and presenting mining seminars and workshops. This component also provides for preparation of informational and educational products such as exhibits, slide presentations, and briefing materials. Information on revised regulations is regularly provided to State regulatory authorities, the coal industry, and the public through specific technical materials dealing with the revised topical areas of the regulations.

In its mandate to solve technical regulatory issues and to provide technical assistance to the States, OSM is committed to sharing current valid scientific information.

For several years, OSM has managed a significant technical research program and has accumulated a valuable data base of scientific information on mining and reclamation issues. In the early years of the research program, many studies were performed to assist in the development and refinement of the regulatory program. In FY 1988, however, the nature of the OSM research program changed. With the regulatory program firmly in place, the research program began to focus on specific environmental and regulatory problems experienced by the States, OSM, industry, and environmental groups. As a result, these groups were given a significant role in choosing the research topics, and it followed that they should be fully informed of the results.

7. Environmental and Economic Analysis

In this component, technical staff:

- prepare environmental and economic analyses to support and/or analyze rulemaking actions, major administrative changes, unsuitability petitions, and other initiatives related to OSM's mission;
- assist in the development of the following environmental documents: environmental assessments, environmental impacts statements, findings of no significant impact, and records of decision.
- conduct environmental and economic analyses for permit and mining plan reviews to assure compliance with the requirements of the Mineral Leasing Act of 1920;
- update and maintain a data base of environmental and economic indicators that are associated with OSM's regulations and their effect on the coal industry and the regional and national economy;
- conduct other economic analyses associated with regulatory actions as needed, such as the assessment of a GAO proposal for cost recovery;
- provide support to ensure OSM's compliance with executive orders on floodplains, wetlands and other environmental requirements;
- ensure compliance with Executive Order 12291, which requires Federal agencies to analyze the impacts of all regulatory actions on the economy and industry;
- provide analytical support for the Department of Interior's scheduled five-year and ten-year reviews of regulations in accordance with the Regulatory Flexibility Act, and;
- analyze other issues such as coal supply and demand which are used to evaluate petitions to designate lands unsuitable for coal mining.

OSM policy decisions must be based on systematic and sound analyses such as NEPA compliance analyses and measurements of economic impact. In many cases, these analyses are required by law. Continued funding in this component is necessary to ensure the availability of pertinent information used in considering the environmental and economic consequences of OSM decisions.

8. Outcrop and Underground Fire Control

Pursuant to Public Law 83-738, funds are provided to control and extinguish outcrop and underground fires. Outcrop fires exist in many western States where lightning, brush fires, or campers ignite coal exposed on the surface at outcrops. Since these fires are not necessarily associated with abandoned mines and do not necessarily pose immediate health threats, they are not eligible for AML funding. However, they present a hazard to local timber, pastures, and air quality and they consume resources which could be mined in the future.

Underground fires on the other hand are usually associated with abandoned mine lands and sometimes constitute emergencies, in which case their control and extinguishing efforts are funded from AML emergency funds. But in the everyday course of events and because both kinds of fires have potential for negatively affecting the environment, they both need continuous investigation and study.

Funding for this component has remained stable for the last several years, and allows OSM to undertake a few new projects each year. The purpose of these projects is to complete surveys, investigations, and research related to outcrop and underground fires. These projects provide identification of the cause and extent of these fires in coal formations, and they suggest methods for controlling or extinguishing them.

9. Permit Application and Mining Plan Review.

a. Mining Plan/Permit Review. OSM processes permits to mine coal in Federal program States (States not having an approved regulatory program), on Federal lands where there is no cooperative agreement, and on Indian lands. Within the Department, OSM has lead responsibility for Federal mining plan review and related NEPA compliance activities. The Assistant Secretary for Land and Minerals Management approves or disapproves mining plans required for operations with coal on Federal lands; the Assistant Secretary for Indian Affairs approves mining plans required for operations with coal on Indian lands.

The Assistant Director for Western Operations and the Chief of OSM's division of permitting in Knoxville approve or deny permits for surface coal mining operations in States with a Federally administered regulatory program. Federally administered programs exist in non-primacy States and in States that have elected not to enter into cooperative agreements to regulate on Federal lands or do not have a full permit delegation cooperative agreement. Lands with Federal coal are also required to have approved mining plans. OSM is responsible for performing permit application reviews and for other permitting related activities, reviewing lands unsuitable petitions, and conducting technical functions related to the release of performance bonds and bond forfeitures.

The procedures and time requirements for each phase of the mining plan and permit review process in Federally administered programs are: review of the permit application package (PAP) for administrative completeness (1-2 months); technical review of an administratively complete PAP (1-2 months); and preparation of findings and supporting documentation and environmental analysis (1-3 months) and/or environmental impact statement (EIS) (up to 12 months). These times are sometimes greater depending on the complexity of a permit application, the size of the mine, and the response times for applicants in submitting additional information required to process the permit. An EIS may be required in processing the PAP for a new mining operation where significant impacts have not been previously analyzed.

OSM's anticipated workload for mining plan and permit application review activities are illustrated in Table 6. Identified in the first column is the workloads expected to be accomplished by both OSM and the States under cooperative agreements. Where an approved cooperative agreement is in place, States have control over the time of initiation and completion of these workload requirements. Workload data are also provided for the Federal lands program (Federal lands permits and cooperative agreement mining plans and Federal lands with OSM as the regulatory authority); Federal programs (Federally-administered State programs); and Indian lands programs.

The majority of the Federal workload for review of permits for all four programs will be performed by staff of the division of permitting in Knoxville and by the Western Field Operations staff.

The projected Fiscal Year 1990 cumulative workload includes a total of 136 permit applications and 4 EISs. This workload includes 70 new applications expected to be received during the year and 66 carried over from Fiscal Year 1989. By the close of Fiscal Year 1990, OSM will issue about 74 permits.

SMCRA Section 515(c) requires a mid-term permit review of mining operations. Mines usually receive five year permits which must be reviewed midway through the permitting period. Additionally, both SMCRA and OSM regulations require reviews of variances for approximate original contour, restoration requirements for steep slope mining, mountaintop removal, and experimental practices, as well as variances for delays in contemporaneous reclamation in combined surface and underground mines. The mid-term permit review determines whether permits will require revisions or modifications during the permit term. Revisions or modifications require written findings and may be subject to the notice and hearing requirements of the permanent program.

b. Support for Bureau of Land Management Leasing Actions and Unsuitability Petition Processing.

This program component includes OSM support for BLM leasing actions involving Federal coal resources and for Federal processing of petitions to designate certain Federal lands unsuitable for coal mining. These workloads are included in the Federal Lands Program column of Table 6. Although new leasing activity has been curtailed, new leases will continue to be issued in the lease-by application mode, and workload stemming from previous commitments in Fiscal Year 1989. There will be one new support action in Fiscal Year 1990. This level of effort is expected to continue into Fiscal Year 1991.

OSM provides technical assistance and policy guidance for the development of Federal coal leasing tract nominations and the preparation of regional and site-specific EIS's and environmental assessments. Participation in these pre-leasing activities assures that NEPA compliance analyses that are prepared for leasing actions will reduce the likelihood of having to prepare an EIS for these new leases.

Under Section 522 of SMCRA, when an unsuitability petition is filed and OSM is the regulatory authority, or where Federal lands are involved, the Secretary is responsible for determining whether the lands are unsuitable for mining. During Fiscal Year 1990, OSM will be processing a land unsuitable petition for Flat Fork Creek (Tennessee).

TABLE 6

PROJECTED WORKLOAD RELATED TO REGULATION OF SURFACE MINING ON FEDERAL & INDIAN LANDS AND IN FEDERAL PROGRAM STATES, BY FISCAL YEAR

ACTIVITY	FEDERAL LANDS IN PRIMACY STATES WITH COOPERATIVE AGREEMENTS		FEDERAL LANDS IN PRIMACY STATES WITHOUT COOPERATIVE AGREEMENTS		FEDERAL PROGRAMS (NON-PRIMACY STATES)		INDIAN LANDS	
	FY 90	FY 91	FY 90	FY 91	FY 90	FY 91	FY 90	FY 91
REVIEW AND PROCESSING OF APPLICATIONS FOR NEW PERMITS AND MINING PLANS								
In progress from previous FY.	0	2	7	2	54	56	5	2
Anticipated current FY.	5	6	6	7	58	46	1	2
Total workload for FY.	5	8	13	9	112	102	6	4
Completed in FY.	3	6	11	8	56	57	4	2
Balance at end of FY.	2	2	2	1	56	45	2	2
MONITORING AND REVISION OF PERMITS AND MINING PLANS 1/								
In progress from previous FY.	54	37	7	5	125	126	43	42
Anticipated current FY.	42	40	29	25	476	476	30	35
Total workload for FY.	96	77	36	30	601	602	73	77
Completed in FY.	59	55	31	25	475	510	31	40
Balance at end of FY.	37	22	5	5	126	92	42	37
DEVELOPMENT OF NEPA COMPLIANCE DOCUMENTS								
A. EISs AS LEAD AGENCY								
In progress from previous FY.	1	1	0	0	0	0	1	0
Anticipated current FY.	2	2	0	0	0	0	0	1
Total workload for FY.	3	3	0	0	0	0	1	1
Completed in FY.	2	2	0	0	0	0	1	1
Balance at end of FY.	1	1	0	0	0	0	0	0
B. EAs AND FONSIs								
Completed in FY.	19	28	10	8	60	63	30	30
C. EIS AS COOPERATING AGENCY IN SUPPORT OF BLM LEASING ACTIONS								
Anticipated current FY.	1	1	0	0	0	0	0	0
REVIEW AND PROCESSING OF PETITIONS TO DESIGNATE LANDS UNSUITABLE FOR MINING								
In progress from previous FY.	1	1	0	0	1	0	NA	NA
Anticipated current FY.	0	0	0	0	0	1	NA	NA
Total workload for FY.	1	1	0	0	1	1	NA	NA
Completed in FY.	0	1	0	0	1	1	NA	NA
Balance at end of FY.	1	0	0	0	0	0	NA	NA
REVIEW AND PROCESSING OF EXPLORATION PERMITS	1	1	2	0	2	2	NA	NA

1/ Includes mining plan modifications, permit renewals or revisions, compliance with special conditions, mid-term permit review, and the transfer, sale or assignment of permit rights.

10. Technical Training.

Recognizing the need for an ongoing educational program to increase the technical competence of Federal, State, and tribal personnel, OSM established the technical training program in 1985. The program seeks to improve the technical skills and professionalism of Federal and State personnel whose jobs are related to SMCRA. Coal mine inspectors make up the largest group of trainees. The program also delivers training to staff whose job duties relate to permit approval, bond release, reclamation, and enforcement. The program updates technical expertise and, as warranted, establishes consistent standards for inspectors in primacy States and OSM.

Inspectors and other program staff must make numerous and complex technical judgments to perform their duties. No one discipline encompasses all the technical requirements. Therefore, all personnel have some areas where their expertise must be upgraded. In addition, periodic training is needed to disseminate the latest technological and other changes in regulatory and associated reclamation activities. Disciplines involved in enforcement of the Act include engineering, hydrology, agronomy, soils sciences, and botany. Inspectors must also have the ability to gather evidence and testify in court regarding their inspections. Training for this is also provided.

OSM works with the States to develop training curricula that meet current needs and provide the most up to date technical information. State and OSM personnel oversee course development and evaluate and monitor course presentation. Staff in Headquarters coordinate curricula development, scheduling, and management of training contracts. Courses are held in close proximity to participants' offices, which results in low travel cost. Course material is adapted in accordance to the uniqueness of the coal region or individual State programs.

The program provides a varied curriculum to over 1,000 trainees annually. In FY 1989, OSM provided eleven different courses to over 1,200 participants. Table 7 displays FY 1989 training activity.

Since FY 1986, the technical training program has delivered over 4,600 training instances to Federal, State and tribal employees (a training instance is defined as one person receiving one course). Each class includes a mix of Federal and State personnel. This reduces communication problems between the two entities and increases knowledge of each other's programs. In addition, training State and Federal inspectors together is a major step toward ensuring technical consistency during all types of inspections.

In FY 1990, the program will add the following courses to the curriculum:

Evidence Collection and Testimony
Administration and Inspection of Reclamation Contracts
Facilitation Training
Basic Inspection
Acid and Toxic Forming Material Workshop
Inspection for Bond Release

TABLE 7
SUMMARY OF FY 1989 TRAINING ACCOMPLISHMENTS
(Number of participants)

COURSES	NO. OF SESSIONS	STATE	TRIBES	OSM	OTHER	TOTAL
APPLIED HYDROLOGY FOR PERMIT REVIEW	3	51	1	8	2	62
BLASTING AND INSPECTION	10	147	1	21	2	171
ENFORCEMENT PROCEDURES	2	38	0	2	0	40
ENGINEERING PRINCIPLES FOR PROGRAM PERSONNEL	6	113	2	23	0	138
INSPECTION FOR BOND RELEASE	8	168	1	10	0	179
INSTRUCTOR TRAINING	3	11	0	47	0	58
SOILS AND REVEGETATION	4	104	0	14	1	119
SPOIL HANDLING AND DISPOSAL PRACTICES IN STEEP SLOP AREAS	6	123	0	27	0	150
SURFACE AND GROUNDWATER HYDROLOGY	6	105	8	18	0	131
TECHNICAL WRITING	8	107	0	23	1	131
UNDERGROUND MINING TECHNOLOGY AND EFFECTS	4	58	0	12	0	70
TOTALS	60	1025	13	205	6	1249

In FY 1991, OSM will continue to provide technical courses to personnel whose jobs are related to SMCRA. New courses will be added according to needs assessment results.

In FY 1988, a study of the training program found that technical training has improved overall job performance of staff whose jobs are related to SMCRA. Furthermore, the study determined that the program increases cooperation among State and Federal counterparts. The study also found that the program is significantly less costly than other Federal technical training efforts.

The most important product of the training program has been the steady improvement in the regulation and reclamation of surface coal mining. These successes have been largely due to the increase in staff technical knowledge, the improvement of relationships among Federal, State, and tribal personnel, and the improvements in staff ability to make sound evaluations and decisions. Through the training program, many of the problems which made implementation of SMCRA difficult have diminished.

Justification of Program and Performance

Activity: Federal Regulatory Programs
Subactivity: Assessments and Collections

(Dollar Amounts In Thousands)

	FY 1990 Enacted	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From 1990	Inc. (+) Dec. (-) From Base
Assessments and Collections					
($)	9,100	9,220	12,095	+ 2,995	+2,875
(FTE-T)	100	96	100	---	+4

Authorization: 30 U.S.C. 1232, 1260, 1268 (Sections 402, 510(c), and 518, Surface Mining Control and Reclamation Act of 1977).

Objectives:

1. Maintain a collections process which motivates operators to abate violations and to pay their debts.
2. Provide a program for negotiating and settling penalty assessment cases whenever possible.
3. Implement collection procedures which provide for the early identification and the timely and effective pursuit of debtors.
4. Assess penalties in a manner which is commensurate with the offense and deters the likelihood of future violations.
5. Utilize contractors and outside experts to achieve cost effective, state-of-the-art collection methods.
6. Provide technical assistance to state regulatory authorities in carrying out their assessment and collection functions under primacy.

Base Program

This subactivity has three components: (1) civil penalty assessments; (2) collections; and (3) alternative enforcement. A comparison of the Fiscal Year 1991 base to the Fiscal Year 1991 estimate is presented below by program component.

(Dollars in Thousands)

Program Component		FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-)
Civil Penalty Assessments	$	1,414	1,414	---
	FTE-T	22	22	---
Collections	$	6,982	9,857	+2,875
	FTE-T	40	44	+4
Alternative Enforcement	$	824	824	---
	FTE-T	34	34	---
Subactivity Total	$	9,220	12,095	+2,875
	FTE-T	96	100	+4

1. Civil Penalty Assessments

The assessment process determines the amount of penalty to be paid for a violation cited under OSM regulations. Penalties levied under the existing assessment system are intended to be commensurate with the severity of the violation as affected by such factors as negligence, history of minesite abuse, seriousness of the violation, and good faith efforts made by an operator to correct or abate the problem.

OSM's assessment program was decentralized in January 1988. At that time, OSM's Knoxville office assumed responsibility for assessment of all new violations and cessation orders in the east, while Western Field Operations became responsible for the west. Automation of the process to link inspection and assessment functions has resulted in more timely assessments and efficiencies in the program. As September 30, 1989, OSM has assessed $195 million in civil penalties.

OSM has developed a variety of initiatives to improve the assessment process. These include:

- The criteria used for assessing violations have been revised to more fairly reflect the severity and long-term effects of the violation. The procedures for applying the "point system" for assessing penalties have been revised to reflect this. The assessment manual was revised to reflect these changes and training was provided to all assessment personnel in the two field locations.

- All Notices of Violations (NOVs) and Cessation Orders (COs) are routinely reviewed by field enforcement supervisors and managers for substantive and procedural accuracy. Copies of citations are sent for assessment to Knoxville and if there are any missing items or incomplete information, an immediate request is made to the originating field office to correct the deficiency. A monitoring system is used to ensure that the information is provided in a timely manner.

- Notices of Proposed Assessments (NOPAs), NOVs, and COs have been revised to make them more understandable and less "legalistic." Requirements relating to enforcement action and penalties for non-compliance are clearly spelled out in the revised versions. Deadlines for the delivery of these citations are being met and this activity is routinely monitored by OSM. Citations are served at the minesite whenever possible, otherwise OSM contracts with a company to serve citations. All citations are referred to the contractor as soon as normal service procedures prove ineffective.

- A case-by-case review of all Title V cases identified in the Collection Management Information System (CMIS) data base has been completed. Cases shown as not having been assessed were assessed and final orders issued.

OSM's conference officer program is available for operators to informally appeal the penalties assessed against them before the assessment becomes final. After successful pilot programs in Oklahoma and Tennessee, the conference officer program was enhanced to allow the conference officers more authority to negotiate with the operators to settle cases, whenever feasible. Conference officers review the assessments and negotiate the penalty amounts, provided documentation is sufficient. Also, in cases where abatement has occurred, settlements are possible if the operators agree to, and actually pay, the violation amounts negotiated.

From the inception of the program in August 1985, through the end of Fiscal Year 1989, conference officers have:

- conducted 2,995 conferences. Some of the violations negotiated were dated back to early 1979;

- settled or resolved 47 percent of the violations brought to conference;

- collected $582,930 in civil penalties, and;

- promoted the abatement of on-the-ground violations (conference officers will not settle a case until abatement has occurred).

2. Collections

The collections process involves taking an assessed violation from final order to closure. Activities included under collections consist of: (1) managing debt collection contractors; (2) applying the provisions of the Debt Collection Act;

(3) maintaining a detailed record of all accounts receivable; and (4) concluding all outstanding assessed violation cases. The key to a successful collections program is timely identification and vigorous pursuit of the debtor once the debt is due. The program must ensure that avoiding payment of the debt negatively affects the debtor. This is accomplished partly through the use of Applicant Violator System (AVS) which identifies debtors during the permit approval process. The collections program must also reinforce the basic purpose of the enforcement program, which is not to generate revenue, but to ensure abatement of on-the-ground violations. OSM does not believe that payment of a penalty without abatement of the violation satisfies the operator's obligations--the violation must be abated.

Debts owed to OSM have historically resulted from unpaid civil penalties for violations of Title V enforcement standards of SMCRA or delinquent AML fees (see the AML collection component in the fee compliance subactivity). The success of the collections process depends in large part on the enforcement program's ability to provide operators with incentives to abate violations and to pay their debts promptly.

As new debt is created, OSM:

- serves notices to responsible parties in accordance with the Debt Collection Act advising of additional penalties, interest, and administrative changes. A final demand letter is sent with 30 days advising of possible legal action if the debt is not paid;
- attempts collection through telephone calls to the responsible party;
- lists the debt on the Applicant Violator System, thus preventing violators from receiving new coal mining permits until all debt is paid;
- forwards delinquent cases to a GSA-sponsored private collection agency;
- obtains an independent third party evaluation, known as a Net Worth Determination (NWD), to determine a debtor's ability to pay;
- promptly refers debt determined to be collectible to the Solicitor for litigation;
- promptly reclassifies uncollectible debt so that scarce resources will not be spent on fruitless cases;
- utilizes offsets of overpayments made in one program against debt due in another program (e.g., AML overpayments are offset against delinquent civil penalty debt), and;
- cooperates with the Tennessee Valley Authority to block coal sales contracts with delinquent debtors.

The Applicant Violator System (AVS)

The Assessments and Collections subactivity supports the Applicant Violator System (AVS), an automated system available to the States to identify operators who have Title IV or Title V debt and/or have unabated violations. Using AVS, the States can identify delinquent operators and subsequently deny new mining permits or suspend or revoke active permits until all violations have been abated and debts have been satisfied.

As a result of a 1985 U.S. District Court settlement agreement, OSM was required to design and develop a computer system that could identify:

- all permanent program applicants and permittees, and all persons who own or control such applicants or permittees; and
- all business entities, including corporations, partnerships, and individuals that are responsible for unabated cessation orders or unpaid civil penalties, and all persons who own or control such entities.

The Applicant Violator System (AVS) began operation in October 1987. By then the scope of the system was expanded by Congress to include all entities responsible for unpaid abandoned mine land (AML) fees and, in subsequent phases, all entities responsible for unabated State cessation orders and unpaid State civil penalties, and coal mining related Federal or State air or water act violations.

AVS supports efforts to control the issuance of coal mine permits. If applicants have outstanding violations or are affiliated with entities that have unabated Federal cessation orders, unpaid Federal civil penalties or delinquent fees under the Surface Mining Control and Reclamation Act of 1977 (SMCRA or the Act), these matters must be resolved before new permits are issued. AVS gives the regulatory staffs rapid access to the pertinent records. Under SMCRA, coal mine operators must apply for permits from the Office of Surface Mining Reclamation and Enforcement (OSM) or State regulatory authorities before beginning to mine. Section 510(c) of SMCRA prohibits the issuance of permits to applicants with previous violations under the surface mining law that have not been corrected, or to applicants related to other violators through ownership and control. Violation information is maintained in the system until the violator (or owner or controller of the violator) pays the debt and completes the required abatement. If an applicant, or an owner or controller of the applicant, has unabated violations or unpaid civil penalties, OSM notifies the State of the outstanding Federal violations or penalties. All approved State programs contain requirements consistent with SMCRA to block the issuance of new permits to violators. Where OSM has primary authority for enforcement of the Act, OSM blocks the application for a permit until the civil penalties are paid and any required reclamation completed.

Implementation of the AVS system continues to occur in close coordination with the States. States have "in-house" access to data using personal computers which are connected to a mainframe computer located at the U.S. Geologic Survey in Reston, Virginia. Utilizing this system, the States review the previous records of applicants for new mining permits. Also, the States update the AVS data base via their local AVS terminals. Since OSM recognizes that State participation is crucial to the success of AVS, the Agency has provided the States with computer terminals and the necessary training.

To ensure effective system operation and coordination with the States, OSM established the AVS Clearinghouse which supports the system and its users. The Clearinghouse is located within the Division of Debt Management and is under the Directorate of Finance and Accounting. The Clearinghouse provides assistance to State and Federal permitting authorities by handling system problems, serving as liaison with the AVS host computer center, and by providing guidance on the use of hardware and software. The Clearinghouse also assists users with the interpretation of AVS data and its results and proposes modifications and enhancements to the AVS system based upon user feedback. In addition, the staff responds to rebuttals to the AVS System Of Record and resolves conflicts in AVS data.

From its inception through the end of Fiscal Year 1989, the AVS Clearinghouse reviewed a total of 7,012 permit applications using the AVS system. Of these 7,012 cases reviewed, OSM recommended that 5,876 permits be issued, 929 permits be denied, and 207 be issued conditionally.

Through September 30, 1989, the AVS violation data base contained 2,268 cases of unpaid AML fees, 3,601 unpaid 518(h) civil penalties, 5,244 unpaid 581(a) civil penalties, 2,571 unabated cessation orders, and 3,963 bond forfeitures.

OSM has worked to improve the quality of the AVS data base. Particular emphasis has been placed on increasing the system's ability to identify repeat violators of SMCRA, and to institute quality assurance practices that ensure data completeness and accuracy. Ongoing training, software improvements, and checks of the data when it is uploaded from local terminals to the mainframe computer are helping to assure the quality of State entered data.

OSM has included the assessment of State AVS operations in its oversight of State regulatory programs. This provides an additional check on data quality as well as on the States' use of the system for permit review and approval.

A major element of the AVS involves complex determinations of all owners/controllers of coal operations as defined in rules published October 1988. The regulations define the terms "ownership" and "control"; permit approval is now denied to corporations or individuals who meet the new ownership and control definitions. OSM is obligated to serve as the central inventory point for all State and Federal violators and their owners and controllers.

On January 24, 1990, the Department of Interior entered into an agreement with major environmental groups regarding the AVS. According to the agreement, Interior agreed to a major agenda of AVS improvements, including the following:

- completing, correcting, and refining the AVS database of potential ownership and control links between permit applicants and persons or entities responsible for uncorrected violations;

- interfacing with data bases maintained by the U.S. Mine Safety and Health Administration, the Energy Information Administration, and the States;

- augmenting and verifying AVS data by reviewing Federal inspection and legal files, company records, audit information, and by field investigations;

- formalizing agreements with State surface mine regulators on screening permit applicants and verifying AVS information;

- working with the Tennessee Valley Authority to block purchase of coal from violators of the surface mining law;

- reviewing permits already in force, to suspend or revoke any that should not have been issued because of uncorrected violations or ownership and control links with the violators;

- proposing formal sanctions against people who intentionally give incomplete or incorrect ownership and control information on coal mine permit applications;

- developing standards, through rulemaking if necessary, for determining how AVS ownership and control links may be judged erroneous and for updating ownership and control information.

OSM is requesting an increase of $2.875 million and four FTEs in FY 1991 to support AVS improvements as stated in the agreement. The major thrust will be towards refining the AVS data and computer technology. This effort will improve the accuracy and credibility of OSM's computer system by completing and/or correcting all data files in the system. The AVS will also be more efficient because all the systems supporting the AVS will be linked together to provide quicker decisions. A benefit of this effort will be the provision of timely information to regulatory authorities on a company's responsibility for a mine site which may lead to reclamation of the site or prevention of future damage to the environment. The funding will also support OSM and State efforts to collect and maintain data on permit applicants who have violated the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The resulting AVS will use newer and improved computer technology and be a more sophisticated system. More importantly, enforcement of SMCRA will be strengthened.

Much closer interaction will be required between State and Federal regulatory agencies to administer this revised and expanded system. A major change in the design of the AVS allows States to input data into AVS without Federal verification. OSM will provide the States with training regarding the redesigned system.

Collection Process for Delinquent Debt

OSM's debt collection strategy stresses reliance on outside experts rather than attempting to duplicate this expertise internally. The main features of the collections process include: (a) using professional collection agents to collect debt; (b) pursuing alternative enforcement actions, such as permit denial to remove the incentive for avoiding payment and to serve as a deterrent to potential future debtors; (c) rapid processing of cases to provide an incentive for the timely abatement and payment of debt; and (d) removing uncollectible debt from the debt collection portfolio. All debtors with uncollectible debt will be included in the AVS data base, which allows for identification of persons for possible denial of future mining permit approvals. Also, as part of its collection effort, OSM implemented provisions of the Debt Collection Act of 1982 (Public Law 97-365, 31 U.S.C. 3711) for the assessment of interest, administrative costs, and penalties.

Beginning in 1985, OSM implemented a range of initiatives to improve the collections process. Resolving the existing backlog of cases became a principal concern, and the agency began the process of removing uncollectible cases from the debt portfolio, in accordance with guidelines from the Departments of Justice and Treasury, the Office of Management and Budget, and the General Accounting Office. Essentially, when debt is reclassified, further collection activity is suspended but only after efforts have been exhausted to determine the availability of assets to pay the debt. Although the cases are removed from the books for collection purposes, a record of the debt is maintained to ensure that violators are not granted new mining authority. Names of those operators and the known principals in these firms are placed in the AVS in case any of them should attempt, either directly or indirectly, to undertake mining again. Anyone who wants a new permit must first clear the old record, including the correction of violations and the payment of outstanding civil penalty debt.

OSM's collection efforts have also been enhanced by the use of Net Worth Determination (NWD) reports that identify whether a company has assets to pay its debt. NWDs provide a basis for referring cases to the Solicitor for concurrence in reclassification, or as applicable, for further action in seeking judgments in cases where assets are potentially available for reclamation or penalty payment.

During Fiscal Year 1989, OSM reclassified $7.3 million of debt. The success of the debt reclassification is enabling the agency to concentrate its efforts on "new debt" for which abatement and/or penalty collection is more likely. In addition, placing violators on the AVS provides a major incentive for compliance with SMCRA.

3. Alternative Enforcement

The alternative enforcement process pursues alternative enforcement actions prescribed by SMCRA for unabated violations and takes measures to abate outstanding violations and to keep them from recurring. Under this process, OSM reviews failure-to-abate cessation orders which have remained unabated beyond 30 days to determine which alternative enforcement actions are appropriate. Alternative enforcement actions under SMCRA include seeking injunctions against the violator (section 521(c)), criminal penalties (section 518(e)), permit suspension or revocation (section 521(a)(4)), and individual civil penalties.

(in thousands of dollars)

Increase for FY 1991:	Base	Estimate	Inc.(+)
$	9,220	12,095	+2,875
FTE-T	96	100	+4

Section 510(c) of SMCRA prohibits the issuance of permits to applicants with previous uncorrected violations, and to applicants related to violators through ownership and control. In order to ensure that OSM is in full compliance with Section 510(C), it is critical that the AVS design provides accurate and efficient identification of SMCRA violators as well as intricate ownership/control relationships. OSM is obligated to serve as the central inventory point for all State and Federal violators and their owners and controllers.

On January 24, 1989, the Department of Interior entered into an agreement with major environmental groups regarding the AVS. According to the agreement, Interior agreed to a major agenda of AVS improvements which will strengthen enforcement of the surface mining law.

OSM is requesting an increase of $2,875,000 and four FTEs to implement the agreement with specific AVS improvements such as those listed below:

1. OSM will continue the present redesign of the AVS, including system evaluations and efficiency of system operation. OSM will bring additional data bases on line to enhance State and Federal compliance with existing regulations.

2. OSM will confirm, and complete as appropriate, the AVS data to ensure that the system contains the most current and accurate data.

3. OSM will provide the States with training regarding the redesigned AVS so that States can input data into AVS without Federal verification of State violations. Training will also be provided so that the States can make best use of the enhanced system.

4. OSM will make full use of the ownership and control data obtained from Form OSM-1 and will use AML audit information to verify company submitted data in the permit application.

The object class distribution of the proposed increase is as follows:

	FTE	$(000)
Personnel	+4	150
Personnel Benefits		25
Other Services		2,700
Total	+4	+2,875

DEPARTMENT OF THE INTERIOR
Office of Surface Mining Reclamation and Enforcement
Summary of Requirements by Object Class
(Dollar Amounts in Thousands)

	Appropriation: Regulation and Technology	1991 Base		1991 Estimate		Inc.(+) or Dec.(-)	
		FTE	Amount	FTE	Amount	FTE	Amount
Object Class							
	Personnel Compensation:						
11.1	Permanent Positions - FTE-P.............	723	30,819	727	30,969	+4	+150
11.3	Positions Other Than Permanent..........	16	742	16	742	---	---
11.5	Other Personnel Compensation............	---	548	---	548	---	---
	Total Personnel Compensation............	739	32,109	743	32,259	+4	+150
Other Objects							
12.1	Personnel Benefits......................		5,608		5,633		+25
13.0	Benefits for Former Personnel...........		60		60		---
21.0	Travel and Transportation of Persons....		1,961		1,961		---
22.0	Transportation of Things................		75		75		---
23.1	Rental Payments to GSA..................		2,503		2,503		---
23.2	Rental Payments to Others...............		102		102		---
23.3	Comm., Utilities and Miscel. Charges....		2,193		2,193		---
24.0	Printing and Reproduction...............		80		80		---
25.0	Other Services..........................		12,985		13,428		+443
26.0	Supplies and Materials..................		1,153		1,153		---
31.0	Equipment...............................		1,988		1,988		---
41.0	Grants, Subsidies and Contributions.....		43,410		49,410		+6,000
	TOTAL REQUIREMENTS......................	739	104,227	743	110,845	+4	+6,618

DEPARTMENT OF THE INTERIOR
Office of Surface Mining Reclamation and Enforcement
Regulation and Technology
Program and Financing
(In Thousands of Dollars)

Identification code 14-1801-0-1-302		1989 act.	1990 est.	1991 est.
Program by Activities				
00.0101	State Regulatory Program Grants..	41,910	41,910	47,910
00.0201	Federal Regulatory Programs......	46,587	48,874	48,845
00.0301	General Administration...........	11,997	12,970	14,090
00.0401	Reimbursables....................	178	---	---
10.0001	Total Obligations................	100,672	103,754	110,845
Financing:				
	Offsetting collections from:			
11.0001	Federal funds................	-96	---	---
14.0001	Non Federal sources.........	-82	---	---
17.0001	Recovery of prior year obligations.................	-5	---	---
21.4001	Unobligated balance available Start of Year...............	-265	-1,026	---
24.4001	Unobligated balance available End of Year.................	1,026	---	---
25.0001	Unobligated balance lapsing...	922	---	---
39.0001	Budget Authority.............	102,172	102,728	110,845
Budget Authority:				
40.0001	Appropriation..................	101,095	101,228	109,345
40.0002	Appropriation (indefinite).....	285	300	300
40.0003	Appropriation (indefinite).....	792	1,200	1,200
43.0001	Appropriation (adjusted).......	102,172	102,728	110,845
Relation of Obligations to Outlays:				
71.0001	Obligations incurred, net......	100,494	103,754	110,845
72.4001	Obligated balance, Start of Year........................	42,596	40,910	42,044
74.4001	Obligated balance, End of Year.	-40,910	-42,044	-45,479
77.0001	Adjustments in expired accounts.......................	-1,622		
78.0001	Adjustments in Unexpired Accts.	-5	---	---
90.0001	Outlays........................	100,553	102,620	107,410

DEPARTMENT OF THE INTERIOR
Office of Surface Mining Reclamation and Enforcement
Regulation and Technology
Object Classification (In Thousands of Dollars)

Identification code 14-1801-0-1-302		1989 act.	1990 est.	1991 est.
	Personnel Compensation:			
111.101	Full-time permanent positions	27,324	30,522	30,969
111.301	Positions other than full-time permanent..................	669	730	742
111.501	Other Personnel Compensation..	416	500	548
111.801	Special Personnel Services Payments....................	10	---	---
111.901	Total Personnel Compensation..	28,419	31,752	32,259
	Personnel Benefits:			
112.101	Civilian......................	5,021	5,543	5,633
113.001	Benefits for Former Personnel.	---	60	60
121.001	Travel and Transportation of Persons.................	1,600	2,048	1,961
122.001	Transportation of Things......	42	75	75
123.101	Rental Payments to GSA........	2,076	2,648	2,503
123.201	Rental Payments to Others.....	96	98	102
123.301	Communications, Utilities and Miscellaneous Charges.......	1,902	2,193	2,193
124.001	Printing and Reproduction.....	233	80	80
125.001	Other Services................	12,904	12,536	13,428
126.001	Supplies and Materials........	1,075	1,211	1,153
131.001	Equipment.....................	1,132	2,100	1,988
141.001	Grants, Subsidies and Contributions...............	46,146	43,410	49,410
143.001	Interest and Dividend.........	26	---	---
199.001	Total Obligations	100,672	103,754	110,845

DEPARTMENT OF THE INTERIOR
Office of Surface Mining Reclamation and Enforcement
Regulation and Technology
Personnel Summary

Identification Code 14-1801-0-1-302	1989 Actual	1990 Estimate	1991 Estimate
Total number of Permanent Positions	746	743	747
Total Compensable Workyears:			
Full Time Equivalent Employment	761	743	743
Full Time Equivalent of Overtime and Holiday Hours	2	2	1
Full Time Equivalent of Youth Program/Developmental Positions	6	6	6

Appropriation Summary Statement

Appropriation: Abandoned Mine Reclamation Fund

The Abandoned Mine Reclamation Fund appropriation supports reclamation program functions carried out by the Office of Surface Mining Reclamation and Enforcement (OSM), the Department of Agriculture, and the States. The Fund is derived from a fee levied on coal production. The appropriation finances grants to States to implement reclamation programs and small operator assistance programs. The Fund also finances management and Federal lands reclamation activities that are directly administered by OSM. In addition, the Rural Abandoned Mine Program (RAMP) administered by the Soil Conservation Service of the Department of Agriculture is supported through this appropriation, as is a portion of OSM's General Administration function.

The total request is $149,896,000, a decrease of $43,674,000 from the Fiscal Year 1991 Base.

Activities covered under this appropriation and major changes from the base include:

1. State Reclamation Program Grants: (-$33,000,000) - This activity provides funds to States to reclaim lands affected by past coal mining. Twenty-three States and three Tribes are expected to have reclamation programs in Fiscal Year 1991. Obligation rates in Fiscal Years 1988 and 1989 were $173 million and $161 million, respectively. $150 million was appropriated in Fiscal Year 1990. The decrease in Fiscal Year 1991 will leave sufficient funds available for States to maintain their reclamation programs. The States will be able to continue reclamation contracts already in progress, as well as to plan for new ones. The request is consistent with the goal to fund States at levels that they can obligate and to avoid an unnecessary buildup of unobligated funds.

2. Federal Reclamation Programs: (-$10,386,000; -91 FTEs) - This activity is divided into three subactivities associated with reclamation program administration and implementation: (1) Fee Compliance; (2) Reclamation Program Operations; and (3) the Rural Abandoned Mine Program.

    - Fee Compliance: (no change) - This subactivity includes OSM's program to collect Abandoned Mine Land fees and to help implement OSM's fee compliance auditing practices. It also supports AML fee data integration into the Applicant Violator System and helps to meet some of that system's operating cost.

    - Reclamation Program Operations: (-$500,000) - This subactivity includes emergency projects; non-program State and Tribal high priority projects; engineering and other technical support for Federal Reclamation program operations; technical assistance to States for reclamation project planning and execution; monitoring of State annual project plans; and OSM's maintenance of the national abandoned mine lands inventory. The decrease is attributable to a decrease in the amount of high priority project activities. Fiscal Year 1989 high priority project obligations were $617,617. Since most remaining priority 1, 2, and 3 problem areas have been addressed, OSM believes that the $1.0 million remaining in the base will be sufficient.

- Rural Abandoned Mine Program (RAMP): (-$9,886,000; -91 FTEs) - This subactivity funds the allocation to the Soil Conservation Service for reclamation of lands as authorized in Section 406(a) of SMCRA. The decrease reflects the Administration's position to rely on State reclamation grants as the primary delivery mechanism for reclamation activities. The request retains $2.1 million in the budget for RAMP to allow for completion of ongoing projects.

3. Small Operator Assistance Payments: (-$500,000) - This activity supports payments to laboratories for authorized services to eligible coal mine operators in preparing applications for mining permits under a State or Federal regulatory program. A decrease of $500,000 is proposed for this activity. Fiscal Years 1988 and 1989 SOAP obligations were $1.592 million and $1.554 million, respectively. Obligations are expected to remain stable through Fiscal Year 1991. The program is proposed at $1.5 million for Fiscal Year 1991.

4. General Administration: (+$212,000) - General Administration is included as an activity in both the Regulation and Technology and Abandoned Mine Reclamation Fund appropriations. There are three subactivities: (1) Executive Direction; (2) Administrative Support; and (3) General Services.

   - Executive Direction: (+80,000) - This subactivity supports the offices of the Director and Deputy Director, and the Director's immediate staff offices. The increase of $80,000 represents this appropriation's share of funds to implement a Department-wide excellence in education initiative which is intended to increase the public's awareness regarding the Nation's natural resources.

   - Administrative Support: (+$132,000) - This subactivity includes the areas of personnel, budget, management services, financial management, grants administration, and information management systems. The proposed increase represents this appropriation's share of expenses associated with the Coal Data Management Information System ($32,000) and a Department-wide women and minorities initiative ($100,000). The increase of $32,000 will be used to support maintenance of OSM's planned schedule for CDMIS development. With regard to women and minorities, OSM intends to focus its efforts on career development and recruitment.

   - General Services: (no change) - This subactivity includes certain agency-wide expenses such as office space, communications, and postage that are most effectively administered as a separate subactivity.

DEPARTMENT OF THE INTERIOR
Office of Surface Mining Reclamation and Enforcement
Abandoned Mine Reclamation Fund

For necessary expenses to carry out the provisions of Title IV of the Surface Mining Control and Reclamation Act of 1977, Public Law 95-87, including the purchase of not more than [21] passenger 22 motor vehicles of which [15] shall be for 16 replacement only, [$192,772,000], to be $149,896,000 derived from receipts of the Abandoned Mine Reclamation Fund and to remain available until expended: Provided, That pursuant to Public Law 97-365, the Department of the Interior is authorized to utilize up to 20 per centum from the recovery of the delinquent debt owed to the United States Government to pay for contracts to collect these debts: [Provided further, That of the funds made available to States to contract for reclamation projects authorized in section 406(a) of Public Law 95-87, administrative expenses may not exceed 15 per centum:] Provided further, That none of these funds shall be used for a reclamation grant to any State if the State has not agreed to participate in a nationwide data system established by the Office of Surface Mining Reclamation and Enforcement through which all permit applications are reviewed and approvals withheld if the applicants (or those who control the applicants) applying for or receiving such permits have outstanding State or Federal air or water quality violations in accordance with section 510(c) of the Act of August 3, 1977 (30 U.S.C. 1260(c)), or failure to abate cessation orders, outstanding civil penalties associated with such failure to abate cessation orders, or uncontested past due Abandoned Mine Land fees: Provided further, That the Secretary of the Interior may deny fifty percent of an Abandoned Mine Reclamation Fund grant, available to a State pursuant to Title IV of Public Law 95-87, in accordance with the procedures set forth in section 521(b) of the Act, when the Secretary determines that a State is systematically failing to administer adequately the enforcement provisions of the approved State regulatory program. Funds will be denied until such time as the State and the Office of Surface Mining Reclamation and Enforcement have agreed upon an explicit plan of action for correcting the enforcement deficiency. A State may enter into such agreement without admission of culpability. If a State enters into such agreement, the Secretary shall take no action pursuant to section 521(b) of the Act as long as the State is complying with the terms of the agreement: Provided further, That expenditure of moneys as authorized in section 402(g)(3) of Public Law 95-87 shall be on a priority basis with the first priority being protection of public health, safety, general welfare, and property from extreme danger of adverse effects of coal mining practices, as stated in section 403 of Public Law 95-87. [Provided further: That 23 full-time equivalent positions are to be maintained in the Anthracite Reclamation Program at the Wilkes-Barre Field Office.]

(Department of the Interior and Related Agencies Appropriations Act, 1990 Public Law 101-121.)

Department of the Interior and Related Agencies Appropriations Act, 1991

Justification of Proposed Language Change

1. The proposed language change is to delete the statement that administrative expenses may not exceed 15 per centum of funds made available to States to contract for reclamation under Section 406(a) of Public Law 95-87. Since direct funding to the Department of Agriculture's Soil Conservation Service for RAMP-type projects is proposed for phaseout and these projects will be carried out under the State reclamation grants program, this language is not necessary.

2. The proposed language change is to delete the statement that 23 full-time equivalent positions are to be maintained in the Anthracite Reclamation Program at the Wilkes-Barre Field Office. Although the office will continue to be staffed in Fiscal Year 1991, providing a staffing floor through legislation limits the ability of OSM to allocate personnel resources effectively and efficiently.

Office of Surface Mining Reclamation and Enforcement

Appropriation: Abandoned Mine Reclamation Fund

A. Appropriation Language

For necessary expenses to carry out the provisions of Title IV of the Surface Mining Control and Reclamation Act of 1977, P.L. 95-87, including the purchase of not more than ___ passenger motor vehicles for replacement only, $______ to be derived from receipts of the Abandoned Mine Reclamation Fund and to remain available until expended: Provided, That pursuant to P.L. 97-365, the Department of the Interior is authorized to utilize up to 20 per centum from the recovery of the delinquent debt owed to the United States Government to pay for contracts to collect these debts: Provided further, That of funds made available to the States to contract for reclamation projects authorized in Section 406(a) P.L. 95-87, administrative expenses may not exceed ___ percent.

B. Appropriation Language Citations and Explanations

1. For necessary expenses to carry out the provisions of Title IV of the Surface Mining Control and Reclamation Act of 1977, P.L. 95-87, 30 U.S.C. 1231

   Provides for the establishment of the Abandoned Mine Reclamation Fund which is administered by the Secretary of the Interior. The Fund consists primarily of monies obtained from reclamation fees paid by coal operators and may be used in many ways for the reclamation and restoration of land and water adversely affected by pre-Act mining--primarily coal mining. The Secretary of the Interior is authorized to transfer, annually, up to 20 percent of the money deposited in the Fund to the Secretary of Agriculture to carry out the purposes of Section 406, P.L. 95-87 (Reclamation of Rural Lands).

2. Including the purchase of not more than ____ passenger vehicles for replacement only, $______ to be derived from receipts of the Abandoned Mine Reclamation Fund and to remain available until expended:

   30 U.S.C. 1231(c)(9)

C. Basic Authorizing Legislation

The Office of Surface Mining Reclamation and Enforcement's (OSM's) basic authorization is derived from the Surface Mining Control and Reclamation Act of August 3, 1977 (30 U.S.C. 1201 et seq.). The purposes of this law include: (1) protecting society and the environment from the effects of coal mining operations; (2) reclaiming existing and future mined areas which endanger public health and safety, prevent or damage the beneficial use of land or water resources, or decrease environmental quality; (3) providing a fund for abandoned mine reclamation; and (4) providing technical and financial assistance to States with primary regulatory authority over coal mining activities within their boundaries.

D. Activity Schedule

1. State Reclamation Program Grants
2. Federal Reclamation Programs
    a. Fee Compliance
    b. Reclamation Program Operations
    c. Rural Abandoned Mine Program (RAMP)
3. Small Operator Assistance Payments
4. General Administration
    a. Executive Direction
    b. Administrative Support
    c. General Services

E. Authorization by Activity

1. State Reclamation Program Grants

Description: This activity provides funds to States to reclaim lands affected by past mining--primarily coal mining. These grants permit States to assume greater responsibility for initiating and completing reclamation projects. State accomplishments in this program are expected to increase significantly since many States have just recently achieved full program management capability.

Authorization: 30 U.S.C. 1231, 1233 and 1239 - Provides that monies in the Abandoned Mine Reclamation Fund will be used for grants to the States to carry out abandoned mine reclamation.

The Fund consists of amounts deposited, from time to time, derived from reclamation fees, donations, audit recoveries, interest charges, and administrative collection fees. The funds collected are used for the reclamation and restoration of land and water resources adversely affected by past mining.

2. Federal Reclamation Programs

This activity is aimed at correcting immediate hazards to public health and safety from past mining practices and includes fee collection and assistance to States developing their own reclamation programs as well as abandoned lands reclamation projects undertaken by OSM and the Soil Conservation Service. Also, this activity is divided into three subactivities associated with reclamation program administration and implementation: (1) Fee Compliance; (2) Reclamation Program Operations; and (3) the Rural Abandoned Mine Program (RAMP).

a. Fee Compliance

Description: This subactivity includes the administration of operations associated with audit and the collection of Abandoned Mine Land fees.

Authorization: 30 U.S.C. 1232 - Provides for the payment of Abandoned Mine Reclamation fees.

b. Reclamation Program Operations

Description: This subactivity includes emergency and high priority projects; engineering and other technical support for Federal reclamation program operations; approval and monitoring of State and annual project plans; and technical assistance to States for reclamation project planning and execution.

Authority: 30 U.S.C. 1231, 1232, 1233 and 1239 - Provides for the use of the Abandoned Mine Reclamation Fund monies for the purpose of protecting public health and facilities, safety, general welfare, and property from extreme danger and adverse effects of coal mining practices; restoration of land and water resources and the environment previously degraded by adverse effects of coal mining operations; and research and demonstration projects relating to the development of surface mining reclamation and water quality control program methods. It also provides that monies in the Abandoned Mine Reclamation Fund will be used to cover the administrative expenses of the Federal Government, accomplish abandoned mine reclamation and develop guidelines on the distribution of monies in the Fund.

c. Rural Abandoned Mine Program (RAMP)

Description: This subactivity provides technical and financial assistance to landowners and land users who voluntarily enter into 5-10 year contracts for the reclamation of eligible abandoned coal mine lands and waters. Funds for this subactivity are annually transferred to the Department of Agriculture, Soil Conservation Service (SCS), to be allocated to its State offices where there are active RAMP contracts.

Authority: 30 U.S.C. 1236 - Provides for assistance to be provided to landowners and land users for reclamation, conservation, and development of rural abandoned lands affected by past coal mining.

3. Small Operator Assistance Payments

Description: This activity provides for the regulatory authority on behalf of eligible small operators to pay for certain costs associated with obtaining hydrologic/geologic information that is needed to prepare coal mining permit applications.

Authority: 30 U.S.C. 1257 - Provides for the regulatory authority to designate a qualified laboratory to obtain the hydrologic/geologic data required by the operator for the permit application, and for the regulatory authority to assume the cost of obtaining such data.

4. General Administration

Description: This activity provides OSM executive direction, administrative support and general services.

Authorization: 30 U.S.C. 1302 - This section provides for funds to be appropriated for the administrative costs needed to carry out the provisions of P.L. 95-87.

F. Administrative Provisions

None

Office of Surface Mining Reclamation and Enforcement
Summary of Requirements
(Dollar Amount in Thousands)

Appropriation: Abandoned Mine Reclamation Fund	FTE	AMOUNT	FTE	AMOUNT
Appropriations enacted, 1990			457	192,772
SUMMARY OF BASE ADJUSTMENTS:				
Additional Cost in 1991 of the 1991 Pay Raise		114		
Adjustment for Rental Payments to GSA		164		
Adjustment for Drug Free Workplace		5		
Adjustments for Fixed Costs 1/		-85		
Adjustment for Current Operations		600		
Total Adjustments to Base		798	---	+ 798
1991 Base Budget			457	193,570
Program Changes (Changes to Base Budget, detailed below)			-91	- 43,674
Total Requirements (1991 Estimate)			366	149,896

Comparison by activity/subactivity:	FY 1989 Actual FTE	FY 1989 Actual AMOUNT	FY 1990 Enacted to Date FTE	FY 1990 Enacted to Date AMOUNT	FY 1991 Base FTE	FY 1991 Base AMOUNT	FY 1991 Estimate FTE	FY 1991 Estimate AMOUNT	Inc.(+) Dec(-) From 1990 FTE	Inc.(+) Dec(-) From 1990 AMOUNT	Inc.(+) Dec(-) From 1991 Base FTE	Inc.(+) Dec(-) From 1991 Base AMOUNT
State Reclamation Program Grants 2/	---	146,600	---	150,000	---	150,000	---	117,000	---	- 33,000	---	-33,000
Federal Reclamation Programs:												
Fee Compliance	106	5,681	96	5,720	96	6,027	9.	6,027	---	+ 307	---	---
Reclamation Program Operations	215	23,905	195	18,044	195	18,257	195	17,757	---	- 287	---	- 500
Rural Abandoned Mine Program	110	12,000	102	12,000	102	12,000	11	2,114	-91	- 9,886	-91	- 9,886
Subtotal	431	41,666	393	35,764	393	36,284	302	25,898	-91	- 9,866	-91	-10,386
Small Operator Assistance Program	---	---	---	2,000	---	2,000	---	1,500	---	- 500	---	- 500
General Administration:												
Executive Direction	20	866	18	873	18	906	18	986	---	+ 113	---	+ 80
Administrative Support	49	1,692	46	1,711	46	1,801	46	1,933	---	+ 222	---	+ 132
General Services	---	2,256	---	2,424	---	2,579	---	2,579	---	+ 155	---	---
Subtotal	69	4,814	64	5,008	64	5,286	64	5,498	---	+ 490	---	+ 212
Total Requirements	500	193,160	457	192,772	457	193,570	366	149,896	-91	- 42,876	-91	-43,674

1/ Includes adjustments for: Departmental Working Capital Fund (-14), CSRS/FERS Retirement Costs (+72), One More Paid Day in FY 1991 (+61), Adjustment for Administrative Efficiency (-129), Adjustment for Staffing Efficiency (-75).

2/ Reflects reprogramming of $4,980,300 from AML grants to Reclamation Program Operations for emergency projects and AML inventory review.

Office of Surface Mining Reclamation and Enforcement
Justification of Adjustments to Base
(In Thousands of Dollars)

Appropriation: Abandoned Mine Land Reclamation Fund

Adjustment for Administrative Efficiency................................-$129

The Department is proposing to decrease spending for consultants, travel, overtime, supplies, and equipment by about 5 percent to improve administrative efficiency and place greater priority on 1991 program initiatives. Specific reductions are proposed in the following areas:

Travel	-$ 43
Overtime	-$ 2
Supplies	-$ 29
Equipment	-$ 55
Total	-$129

Adjustment for Staffing Efficiency......................................-$ 75

Savings are proposed from a planned reduction in the average grade achieved by filling vacant positions at an average of one grade lower than previously filled and from taking into account an expected additional lapse of 30 days before filling positions that become vacant in 1991. Specific reductions follow:

Average Grade	-$ 33
Lapse	-$ 42
Total	-$ 75

Additional Cost in 1991 of the 1991 pay raise..........................+$114

The adjustment is for the additional amount needed in 1991 to cover 40 percent of the additional three quarters' cost of the estimated 3.5 percent pay raise effective in January 1991. The total amount is for general schedule pay. The 1991 cost of the remaining 60 percent will be absorbed in FY 1991.

Rental Payments to GSA..+$164

The adjustment is for increased cost payable to GSA resulting from higher rates for office and non office space.

CSRS/FERS Retirement Costs..+$ 72

The adjustment is for the increase in estimated retirement costs resulting from the continuing growth in the relative proportion of FERS employees in the Bureau work force.

Departmental Working Capital Fund...-$ 14

The adjustment is for decreased costs assigned to the bureau for administrative services provided on a Department-wide basis. In FY 1991, costs for the Washington Interagency Telecommunications System (WITS), the GSA-provided computerized telephone system for the Interior Complex and the Department's in-house data interface/transport system, will decrease. Major acquisition and start-up costs for WITS will occur in FY 1990, with reduced costs in 1991 related primarily to maintenance. This reduction will be partially offset by adjustments for safety management and printing.

One More Paid Day in 1991...+$ 61

The increase in personnel compensation results from there being one more paid day in FY 1991 than in FY 1990.

Drug Free Workplace..+$ 5

The adjustment is for increased costs of fostering a drug free workplace.

Adjustment for Current Operations...+$600

Preliminary information indicates that bureau operating costs for current on-board staff may be exceeding available resources. The bureau has requested an Inspector General review of the matter while the bureau continues its own review of this potential 1990 funding shortfall. This base adjustment would avoid extending the potential 1990 shortfall into 1991.

Analysis by Subactivity

Activity: Federal Reclamation Programs

(Dollars in thousands)

Subactivity	FY 1989 Actual	FY 1990 Enacted	FY 1991 Base	FY 1991 Estimate	Inc.(+) or Dec.(-) from 1991 Base
Fee Compliance	5,681	5,720	6,027	6,027	----
Reclamation Program Operations	23,985 *	18,044	18,257	17,757	-500
Rural Abandoned Mine Program	12,000	12,000	12,000	2,114	-9,886
Total	41,666	35,764	36,284	25,898	-10,386

* Reflects reprogramming of $4,980,300 from AML grants to Reclamation Program Operations for emergency projects and AML Inventory review.

Analysis by Subactivity

Activity: General Administration

(Dollars in thousands)

Subactivity	FY 1989 Actual	FY 1990 Enacted	FY 1991 Base	FY 1991 Estimate	Inc.(+) or Dec.(-) from 1991 Base
Executive Direction	866	873	906	986	+80
Administrative Support	1,692	1,711	1,801	1,933	+132
General Services	2,256	2,424	2,579	2,579	----
Total	4,814	5,008	5,286	5,498	+212

Justification of Program and Performance

Activity: State Reclamation Program Grants

(Dollar Amounts In Thousands)

	FY 1990 Enacted	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From 1990	Inc. (+) Dec. (-) From Base
State Reclamation Program Grants					
($)	150,000	150,000	117,000	-33,000	-33,000
(FTE-T)	---	---	---	---	---

Authorization: 30 U.S.C. 1231, (Surface Mining Control and Reclamation Act of 1977, Section 401(c)).

Objectives:

1) Protect public health and safety by correcting problems associated with past mining practices.

2) Reclaim mined land abandoned before the passage of the Surface Mining Control and Reclamation Act (SMCRA), August 3, 1977.

Base Program:

Grants are provided to States and Tribes with approved reclamation programs to address problems such as underground fires, subsidence, slides, open shafts, unstable or burning refuse piles, acid drainage, and highwalls. Funding for these grants is derived from the Abandoned Mine Reclamation Fund and includes both the States' share and the Secretary's discretionary share.

Under the Act, each State must have an approved regulatory or Title V program and reclamation or Title IV program and an annual project plan before becoming eligible to receive reclamation grant funding. At the start of the Abandoned Mine Land (AML) Reclamation program, most projects were carried out under direct Federal management. As States gained OSM approval of their reclamation programs and were granted regulatory authority, reclamation funds were distributed to them through grants. Twenty-three States will continue to receive reclamation grant funding in Fiscal Year 1991.

Public Law 100-71 allows Tribes access to their share of funds derived from reclamation fees if they have an approved reclamation program. Currently, three tribes (Crow, Hopi, and Navaho) have approved programs and receive AML allocations.

Each year, the States and Tribes select reclamation projects from their inventories of eligible projects and submit construction grant requests to OSM for the necessary work. These grant requests include detailed descriptions of each project and the anticipated benefits of reclamation. OSM reviews the proposals and awards funds accordingly. Construction grants cover a period of three years to allow for program planning, contractual negotiation, contract letting, actual construction and contract close-out. The States also submit applications for administrative grants to fund program management expenses, design and engineering of projects, and contractual services. Program administration grants cover a period of one year.

As soon as a grant is approved by OSM, a letter of credit is established for a State, incurring a Federal obligation and thereby making the funds available for obligation by the State. When a State executes a commitment involving those funds, the letter of credit is drawn down, and a State obligation occurs. OSM, through its 13 field offices, oversees the reclamation projects and expenditure of grant monies.

Over the years, as the States have gained experience, many have made improvements in the administration and management of their programs, resulting in more timely initiation and completion of reclamation projects. States have also paid added attention to the method of priority ranking for reclamation projects. This effort, in conjunction with consistent updating of the National Abandoned Mine Lands Inventory, has done much to ensure that the highest priority reclamation projects are addressed first.

Since SMCRA was passed, States and Tribes have reclaimed 7,212 abandoned mine sites, encompassing almost 77,000 acres across the nation. States and Tribes have also reclaimed 905,994 feet of highwall, 2,260 acres of water impoundments; and some 13,000 acres of mine refuse. Additionally, more than 10,000 mine openings have been either filled or sealed; 190 fires, both surface and underground have been abated, and 337 landslides have been addressed by the States and Tribes.

Despite program improvements and significant reclamation accomplishments, States have historically been slow in obligating the funds awarded to them. As displayed in the table below, the States have maintained large amounts of "unobligated balances" from year to year.

STATES' UNOBLIGATED BALANCES AT END OF FISCAL YEAR

FISCAL YEAR	UNOBLIGATED BALANCE	NET CHANGE IN UNOBLIGATED BALANCE	
		AMOUNT	PERCENT
1983	$202,777,000		
1984	$371,716,953	+169,939,953	+84%
1985	$407,256,432	+ 35,539,479	+10%
1986	$311,649,527	-95,606,905	-23%
1987	$274,592,846	-37,056,681	-12%
1988	$238,213,633	-36,379,213	-13%
1989	$257,120,879	+ 18,907,246	+08%

Through the years, OSM has worked with the States to reduce their unobligated balances. As shown in the table above, the States made steady progress during Fiscal Years 1985 through 1988, when the total unobligated balance was reduced to its lowest in five years. However, in Fiscal Year 1989, the balance rose eight percent from the previous year. While OSM awarded $180 million to the States in Fiscal Year 1989, their obligations were some $19 million lower at a total of $161 million.

In addition to the unobligated balance maintained by the States, funds are also available to the States in their "carryover" balance, which consists of funds appropriated and not yet awarded. As of the end of FY 1989, the States' carryover balance totalled $32 million.

Therefore, at the start of Fiscal Year 1990, a total of $439 million was available to the States:

FUNDS AVAILABLE TO STATES, BEGINNING OF FY 1990

AMOUNT	SOURCE
$150 million	FY 1990 appropriation
$257 million	Unobligated balance at end of Fiscal Year 1989
$ 32 million	Appropriated, unawarded funds at end of Fiscal Year 1989
$439 million	Total available to States at beginning of Fiscal Year 1990

Since Fiscal Year 1985, States' obligations have averaged $179 million annually. In Fiscal Year 1989, States obligated $161 million, the lowest amount in five years. The amount available to the States at the beginning of Fiscal Year 1990 was 2.7 times more than the amount obligated by the States in Fiscal Year 1989.

STATE OBLIGATIONS, BY FISCAL YEAR

FISCAL YEAR	TOTAL OBLIGATION
1984	$ 99,922,787
1985	$176,267,914
1986	$210,641,020
1987	$176,880,312
1988	$173,146,369
1989	$160,816,764

Given the significant level of funds available to the States, and considering the States' five-year history of obligating an average of $179 million annually, OSM is requesting a decrease of $33 million in the Fiscal Year 1991 grant appropriation. The requested appropriation of $117 million is commensurate with the States' projected obligations during the next year, yet at the same time it provides the States with sufficient resources to continue ongoing reclamation projects, plan for future projects, and maintain their administrative programs.

The decrease is consistent with previous budget submissions in that it reflects the Administration's commitment to request a level of funding that the States can utilize. Increasing the grant level would not enhance the reclamation program at all; instead it would only further increase the build up of unused funds.

Minimum Level Program

A minimum funding level program has been established for those States whose annual AML grant allocations are not sufficient to fund their priority 1 and 2 projects listed in the AML inventory. The minimum level amount includes the State share and an amount needed from the Federal share in order to bring the total grant amount to the established minimum level. According to the Fiscal Year 1990 Appropriation Bill, the minimum level is established at $1.5 million.

AML Fund Reconciliation

Concurrent with OSM's 1987 conversion to its automated accounting system, the Advanced Budget/Accounting Control and Information System (ABACIS), the agency began an extensive review to account for and reconcile the AML Fund for Fiscal Years 1977 through 1988. This review also included an evaluation of its accounting and grant monitoring mechanisms. The specific objective was to reconcile the AML "paper trail" with Department of Treasury records, OSM's automated accounting system (ABACIS), and State/Tribe records in a three phase project: 1) reconciliation of AML grant expenditures; 2) reconciliation of State/Federal share of AML awards; and 3) reconciliation of AML receipts.

The project has involved reviewing source documentation from various OSM, State, and Tribal offices; reconstructing and/or automating financial records from the source documents; reconciling the various subsystems within ABACIS and the Department of Treasury; and finally, involving the States and Tribes in the review and concurrence of the workpapers and system records.

The grant expenditure reconciliation phase was completed in October, 1987. All reconciliation and corrections of Department of Treasury totals, ABACIS balances, and State records have been accomplished. OSM has received concurrence from all States regarding their grant expenditures. This phase resulted in several operational improvements, including the development of an automated grants tracking system to monitor grant activity and the establishment of a monthly grant reconciliation between ABACIS and Treasury and the OSM Field Offices.

The State/Federal share reconciliation was completed in October 1988. So far 25 of the 27 affected States have responded to the reconciliation; OSM is working with the remaining two States. This phase resulted in several operational improvements, such as monthly reporting of share balances to the States and Tribes, designation of State-Share and Federal-Share amounts on award documents, and establishment of procedures for allocation of funds.

The reconciliation of AML receipts was completed in August 1989. OSM performed a reconciliation of the source document records in the AML Fee Collection System and the Audit Fee Billing and Collection System to those in ABACIS and Treasury. Due to the effect of the reconciliation on State collection balances, OSM has provided each State and Tribe with a package explaining the project and reporting the results. States have been invited to review all workpapers and systems involved in determining their balance of collections. OSM has received responses from 14 of the 27 affected States and Tribes, and is awaiting concurrence from the other 13 States or Tribes. Some of the system improvements resulting from this phase of the project were the centralization of receipt systems; development of standardized accounting procedures; monthly reconciliation with ABACIS; and the continual maintenance of the fee system to ensure continued reconciled fund balances.

The overall reconciliation project was a significant effort which resulted in greatly improved accounting operations and procedures within OSM. As a result of the project, OSM records and accounts were corrected and updated, and operations were improved to provide a sound and efficient accounting system for the future.

One important benefit of the reconciliation was the growth of a partnership between OSM and the States and Tribes. The reconciliation improved communication and created a more open and cooperative atmosphere among the regulatory authorities and OSM. OSM anticipates that the reconciliation project will continue to produce positive results and lead to a stronger partnership for the future of the AML program.

Inventory Review Project

The 1989 Appropriations Bill for the Department of Interior and Related Agencies provided up to $2.0 million in grants to AML States to conduct a review and revision of the existing inventory for its use as a possible fund allocation tool for Fiscal Year 1990. Since the States were not interested in participating in the effort, OSM developed a plan for conducting the project directly. Due to the limited time and funds available, the project is covering AML problems related to dangerous highwalls, subsidence, and underground mine fires. These three areas account for 75% of the costs of all problems in the inventory.

The project, which began in January, 1989, seeks to improve the inventory's consistency among States in order to allow the application of standard definitions, reclamation guidelines, and cost factors to all projects within the inventory.

The status of each phase of the project are described as follows:

PHASE	STATUS
1. Develop new, more specific, standardized definitions, reclamation guidelines, and cost factors for use in reporting highwalls, subsidence, or underground mine fires to the AML inventory. Apply the definitions to problem area definitions (PADs) for a few representative sites to illustrate their potential effect on the inventory.	COMPLETED
2. Provide States/Tribes and Congress an opportunity to comment on the draft definitions, guidelines, and cost factors. Establish final definitions, guidelines, and cost factors for use in revising PADs.	COMPLETED
3. Conduct all field work required to obtain data needed for the effort to revise existing PADs and to conform them to revised definitions, guidelines, and cost factors. Develop new, revised PADs for those sites visited.	COMPLETED

4. Develop new, revised PADs for all highwall, subsidence and underground mine fire PADs in the inventory for those sites not visited, through office application of the revised criteria.

COMPLETED

5. Provide States/Tribes an opportunity to review the factual basis for any changes which may have been made to PADs in their inventory.

ESTIMATED
COMPLETION DATE
1/90

6. Enter all revised PADs information into the AML inventory database.

ESTIMATED
COMPLETION DATE
6/90

(Dollar Amounts in Thousands)

Decrease for Fiscal Year 1991	1991 Base	1991 Estimate	Dec. (-)
($)	150,000	117,000	-33,000
(FTE-T)	---	---	---

OSM's Fiscal Year 1991 budget request of $117 million for state reclamation grants represents a decrease of $33 million from the Fiscal Year 1990 level. As in prior years, the grants budget request is based on a review of the total amount of funds currently available to the States as well the States' ability to obligate.

As of the start of Fiscal Year 1990, over $439 million was available to the States. Since Fiscal Year 1985, States' obligations have averaged $179 million annually. In Fiscal Year 1989, States obligated $161 million, the lowest amount in five years. The amount available to the States at the beginning of Fiscal Year 1990 was 2.7 times as high as the amount obligated by the States during Fiscal Year 1989.

Given the significant level of funds available to the States, and considering the States' five year history of obligating an average of $179 million annually, the requested decrease is both practical and appropriate. The current request will ensure that an unreasonable build-up of unused or uncommitted funds is avoided as much as possible.

The requested appropriation of $117 million is commensurate with the States' projected obligations during the next year, yet at the same time it will provide the States with sufficient resources to continue ongoing reclamation projects, plan for future projects, and maintain their administrative programs.

The decrease is consistent with previous budget submissions in that it reflects the Administration's commitment to request a level of funding that the States can utilize. Increasing the grant level would not enhance the reclamation program at all; instead it would only serve to further increase the build-up of unused funds.

The decrease for Fiscal Year 1991 is timely and fiscally appropriate. It will allow the States to continue high quality reclamation, yet will avoid further unnecessary build-up of unobligated balances.

The entire decrease will take place in Object Class 41, Grants.

Justification of Program and Performance

Activity: Federal Reclamation Programs
Subactivity: Fee Compliance

(Dollar Amounts In Thousands)

	FY 1990 Enacted	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From 1990	Inc. (+) Dec. (-) From Base
Fee Compliance					
($)	5,720	6,027 [1]	6,027	+ 307	---
(FTE-T)	96	96	96	---	---

Authorization: 30 U.S.C. 1232, (Section 402, Surface Mining Control and Reclamation Act of 1977).

Objectives:

- o To increase the AML reclamation fund balance through a strong audit and collections process that ensures timely payment of reclamation fees.
- o To increase operators' fee compliance by providing an effective system for operators to report production and pay fees, and by providing the incentives for them to do so.
- o To ensure accurate reporting of fees and to deter operators from avoiding fee payment by providing a highly visible, widespread, and aggressive audit program.
- o To ensure full and timely payment of AML debt by providing an effective debt collection system that includes contracts with expert, professional collection agencies.

Base Program:

SMCRA established the AML fund to finance the restoration of land mined and abandoned prior to August, 1977. By 1977, coal mining had disturbed more than one million acres of land, resulting in significant health and safety problems for the American public. An adequate AML fund is essential in ensuring that these problems are abated.

The fund is comprised of fees collected from coal producers. All coal mined in the United States is subject to a reclamation fee based on a fixed rate per ton or percent of the value of the coal at the mine, whichever is less. Fees range from 10 cents to 35 cents per ton.

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[1] The FY 1990 appropriation included $160,000 to fully fund salaries and benefits for AML Solicitors, but the funding was inadvertently placed in Reclamation Program Operations. In FY 1991, OSM will transfer $160,000 from Reclamation Program Operations to the Fee Compliance subactivity.

The Fee Compliance subactivity seeks to improve operators' rate of fee payment. This is accomplished by providing the following:

- an effective mechanism for operators to pay their fees;
- a professional and highly visible audit team to serve as a deterrent to non-payment of fees and to uncover unreported fees;
- an effective debt collection system.

To maximize efficiency, the subactivity is divided into two components: 1) fee collection, and 2) fee compliance (audit program).

AML Fee Collection

Accurate and efficient collection of AML fees is a critical part of ensuring that the AML fund is adequate for reclamation of previously mined areas. To assist in its objective of maximum and timely fee collection, OSM has developed the AML fee collection system. This computerized system records and tracks coal production by tonnage and moisture content, and AML fee payments by individual mine identification number, year, and quarter from producing coal companies. In addition, the system issues quarterly report and payment forms (Form OSM-1) to all coal operators. The system also tracks quarterly payments received, identifies delinquent operators, and sends monthly bills for delinquent accounts.

Operators use the OSM-1 forms to report coal production and compute fees owed. Payment is due within thirty days of the end of each quarter. Method of payment varies according to the size of the coal operation. Operators whose quarterly fees are less than $100,000 per quarter pay through the lockbox system. Operators mail their payments and completed OSM-1 forms to a lockbox operated by a commercial bank. The banks deposit the checks and send the OSM-1 forms with payment confirmations to OSM.

Operators whose quarterly fees exceed $100,000 pay fees through the Treasury Financial Communications System (TFCS) whereby funds are electronically transferred from their local banks through the Federal Reserve System to the Treasury. The Federal Reserve Bank notifies the Treasury of the amount of each deposit and sends transaction documentation to OSM. The OSM-1 form is sent directly by the coal company to the commercial bank lockbox.

When an operator does not pay in full or has under-reported production to OSM as revealed through an audit, OSM bills the coal operator for the additional amount owed. Payment is due within thirty days of the issuance of the bill. If payment is not received within 60 days from when the fees are due, the amount due becomes a debt owed to the Federal government and is subject to penalties, interest, administrative costs and fees in accordance with the Debt Collection Act of 1982.

The AML Fee Collection System is currently operated on the Bureau of Mines mainframe computer. The system is being converted to the Hewlett-Packard minicomputer, scheduled for completion in July 1990. This conversion will make the system more responsive to user needs and increase system processing efficiencies by utilizing data base management system. The Accounting System Compliance Review of 1989, required by the Federal Managers Financial Integrity Act, identified several internal control weaknesses of the AML Fee Collection System. The review found that the system was not in conformance with GAO Title Two. Enhancements and integration into the Advanced Accounting Budget Control Information System are required for conformance.

In order to maximize debt collection, a separate collection branch manages internal collection activities as well as the contracts with debt collection experts.

OSM collection staff manage debt collection from the stage of "final demand for payment" to closure of the case. Collection activities include:

- maintaining a detailed listing of all accounts receivable;
- applying the provisions of the Debt Collection Act;
- providing internal collection activities and pursuing debtors;
- managing debt collection contractors; and,
- recommending the issuance of Notices of Violation or Cessation Orders to penalize delinquent operators.

The Debt Collection Act of 1982 authorizes the use of private collection agencies to assist in most aspects of recovering indebtedness. If OSM collection efforts do not result in satisfactory resolution, debt is referred to a private collection agency for further action. Since Fiscal Year 1987, OSM has used a General Services Administration contract that provides collection assistance to all Federal government agencies. The support services covered under this contract include: preparing reports of non-collectability to support litigation activity; providing information on the private sector as well as public sector activity of a debtor; and providing location services. These functions will continue in FY 1991. If the collection agency is unsuccessful in collecting an account, the case is then referred to the Office of the Solicitor who pursues a number of legal alternatives in an attempt to collect the debt.

Debt which is absolutely uncollectible is "reclassified" so that the debt is removed from the receivable schedule and no further action to collect it is taken. The decision to reclassify a debt is made after careful analysis of the entity's financial condition. Independent contractors perform net worth determinations (NWDs) which provide OSM with a complete description of the subject's ability to pay. When a NWD reveals that the operator does not have the resources or the ability to pay the debt, it is reclassified.

As a final incentive to discourage operators from non-payment of fees, collection staff refer all AML debts to the Applicant Violator System (AVS). The AVS is a nationwide data base used to control the issuance of coal mine permits. If applicants have unpaid or reclassified fee debt, they are identified in the AVS and their debts must be repaid before new permits are issued.

OSM has continued to refine and improve the debt collection process. In FY 1989, AML debt was reduced from $50 million to $48 million. In FY 1989, staff completed an AML policy and procedures manual designed to provide efficiency and consistency in the collection process. Another initiative to improve consistency and accuracy of collection efforts included the publication of a directive establishing consistent guidelines regarding debt settlement.

Further improvements in the collection area include the investigation of all non-responding operators (operators not returning their OSM-1 forms) to determine whether or not they are producing coal.

In FY 1990, OSM collections specialists will be re-aligned in their job duties so that specialists will follow debt cases from initial processing until final payment or reclassification. This system should result in more efficient and effective debt collection, as specialists will be fully informed of the history of each case.

OSM staff work continually to streamline and improve the efficiency of the computerized collection system. Staff regularly review files on the system to ensure identification numbers are current.

AML Fee Compliance (Audit Program)

In order to promote timely and accurate reporting of coal production and to ensure maximum payment of fees, OSM fee compliance auditors perform audits of coal producers throughout the United States. The auditors verify coal production and fee payment by reviewing operators' records.

OSM manages an active audit division with auditors located in 13 eastern offices and one western office; all offices are centrally located in areas of high coal production. Auditors are involved in various strategies for uncovering unpaid fees. In addition to reviewing operators' records to verify that they have paid the correct coal tax, audit staff also compare coal production reported to other government agencies to uncover unpaid AML fees. For example, operators often report high coal production to the Department of Energy and low coal production to OSM. The audit staff investigates these discrepancies and schedules audits if the differences prove viable.

Auditors also identify fees owed by operators who have erroneously claimed fee exemptions. For example, as a result of court order (Save Our Cumberland Mountains, June 6, 1985), OSM audits all operators exceeding the two-acre exemption. In addition, staff review records at coal processing plants to identify operators who have not reported production to OSM.

When performing audits, auditors follow guidelines set forth in the OSM Fee Compliance Manual. The manual presents audit standards, regulations, policies, and procedures to ensure that all audits are conducted efficiently and in accordance with GAO standards. Adherence to the manual also guarantees that all audits are conducted uniformly regardless of the size or location of the mining operation.

Auditors are supervised by regional managers who report to Headquarters. In addition to managing programmatic, operational, and administrative activities, Headquarters staff perform strategic audit planning and targeting to ensure that the most cost effective audits are being conducted.

In FY 1989, the audit program identified and billed over $5.7 million in unreported fees.

OSM has developed an automated system to bill operators and collect AML fees uncovered through audits. The audit program has also established a pilot process whereby operators can appeal audit decisions. A computerized system tracks the number of hours devoted to each audit as well as audit findings; Headquarters uses these data for audit planning.

Occasionally, operators lack complete records on their coal production. In the past, this has resulted in failure to determine fee liability. Auditors now use a formula to estimate coal production in cases of insufficient records; this has reduced audit time and increased fee identification.

OSM continues to improve all aspects of the audit program. All auditors must meet the qualifications for the GS 511 auditor series. Ongoing training is provided and required for auditors to maintain a high level of performance. Audit staff regularly refine the manual to ensure efficiency and applicability to surface coal mining operations.

By FY 1991, the computerized systems should contain several years of data which will allow for more effective analysis of audit results and sharper audit strategy. Auditors will continue to carry out the provisions of the 1985 court order regarding two-acre violators. In FY 1991, audit staff will work to expand the information exchange program with other severance tax states. OSM will continue to broaden its base of coal production data reported to county, state, and national entities for comparison to that reported to OSM. Audit staff will continue to look for unreported coal sales by reviewing records belonging to coal brokers, sales agents, and processing plants. Companies will be targeted for audit according to guidance from Headquarters. Targeting will be aimed according to the greatest financial return and the greatest possibility of deterring companies from future under-reporting.

AML Fund

Since SMCRA instituted the AML fund in 1977, OSM has collected over $2.4 billion in fees. In FY 1989, approximately $234 million of AML fees was collected. OSM projects that in FY 1990 and in FY 1991, receipts will total around $252 and $259 million, respectively. (Projections are based mainly on estimated coal production.)

All fees are deposited with the U.S. Treasury in account to the Abandoned Mine Reclamation Fund. Section 401 (a) refers to this account as a "trust fund." AML fees cannot be released to OSM until appropriated by Congress. As of FY 1989, Congress had appropriated almost $2 billion to OSM. Table 8 displays data on AML receipts and appropriations by year.

SMCRA stipulates that operators' fee liability lasts until 1992, unless extended by Congress. In FY 1989, OSM began a study to assess AML reclamation efforts, the impact of the reclamation fee on the mining industry, and the nature and distribution of the AML reclamation problem. Part One of the study, distributed to the States and to the reclamation community for comment in February, 1989, provides the most complete history of the AML program to date and has been of use in the preliminary congressional deliberations on continuing the fee. Part Two, which will be distributed for comment early in 1990, assesses whether the AML fee should be extended and/or modified. Also in 1990, the Department and OSM will analyze fee reauthorization options.

TABLE 8
SUMMARY STATUS OF ABANDONED MINE RECLAMATION FUND

(Dollars in Thousands)

Fiscal Year	Receipts Amount	Receipts Cumulative	Appropriations Amount	Appropriations Cumulative	Cumulative Unappropriated Fund Balance
1978	105,444	105,444	36,647	36,647	68,797
1979	184,443	289,887	61,451	98,098	191,789
1980	199,000	488,887	94,843	192,941	295,946
1981	192,657	681,544	82,485	275,426	406,118
1982	222,643	904,187	115,333	390,759	513,428
1983	197,187	1,101,374	213,079	603,838	497,536
1984	216,554	1,317,928	271,228	875,066	442,862
1985	225,032	1,542,960	296,941	1,172,007	370,953
1986	219,161	1,762,121	197,277	1,369,284	392,837
1987	215,303	1,977,424	203,720	1,573,004	404,420
1988	228,261	2,205,685	199,380	1,772,384	433,301
1989	234,494	2,440,179	193,160	1,965,544	474,635
1990	251,900	2,692,079	192,772	2,158,316	533,763
1991	258,900	2,950,979	149,896	2,308,212	642,767

NOTES: Fiscal Years 1990 and 1991 receipt figures are projections.

The unappropriated balance is calculated at the end of the fiscal year. Thus, it includes the receipts collected quarterly during that year.

Since figures for Fiscal Years 1990 and 1991 receipts and the Fiscal Year 1991 appropriation are estimates, the cumulative unappropriated balance at the end of those fiscal years may change.

Justification of Program and Performance

Activity: Federal Reclamation Programs
Subactivity: Reclamation Program Operations

(Dollar Amounts In Thousands)

	FY 1990 Enacted	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From 1990	Inc. (+) Dec. (-) From Base
Reclamation Program Operations					
($)	18,044	18,257	17,757	-287	-500
(FTE-T)	195	195	195	___	___

Authorization: 30 U.S.C. 1231 (Surface Mining Control and Reclamation Act of 1977, Section 401(c) and 403).

Objectives:

1. Assist and evaluate State Abandoned Mine Land Reclamation (AMLR) plans and programs.
2. Initiate Federal emergency response actions to correct or alleviate problems posing imminent hazards to public safety and well being.
3. Manage high priority projects to correct or alleviate AML conditions hazardous to health, safety, and general welfare of the public in non-program States.
4. Provide technical services to support Federal and State reclamation operations.
5. Provide evaluation of completed Federal reclamation projects.
6. Maintain an integrated tracking system to acknowledge project accomplishments with the National AML Inventory.

Base Program:

This subactivity includes: reclamation program management and assistance to States; the Federal emergency projects program; funds to primacy states who have elected to run their own emergency programs; implementation of high priority projects in non-primacy States and on Tribal lands; and an inventory and accomplishment tracking program. These functions are discussed in the program components that follow.

Reclamation Program Management and Assistance to States

This program component includes funding for the oversight of and technical assistance for the States' reclamation programs. The Act requires OSM to monitor the progress and quality of each State's program. Continuous program monitoring and assistance, and program evaluations of each State help to ensure that State reclamation programs are functioning effectively.

OSM coordinates with the States its review of the adequacy and effectiveness of each State's program operations. Program reviews are based on an analysis of documents submitted by States (e.g., annual submission, grants, amendments, semiannual reports), and onsite observations of selected reclamation projects. Coordination with the States includes expert assistance on State reclamation projects and regular conferences between the staffs of OSM and State/Tribal AML programs to discuss reclamation issues, technology, and solutions to problems. Requests from States for assistance include areas such as environmental assessments, real property issues, land appraisal problems, and site analyses. OSM expertise is also made available to States for developing construction specifications and engineering cost estimates, project monitoring, and to clarify the ways in which legal and technical requirements pertain to project scope and methodology. Additional efforts focus on gathering and analyzing program data to determine program achievements and project accomplishments. Emphasis is placed, as necessary, on resolving problems that inhibit efficient and/or effective program operations which are identified through evaluations and audits. OSM staff continues to work with State staffs to expedite the preparation of required materials, including the annual grant submission, and to increase the precision and quality of grant applications, nationwide reporting, project definition, cost estimating, and project scheduling.

OSM also manages the National AML Inventory under this subactivity. The inventory contains information on priority 1, 2, and 3 coal-related abandoned mine problems in coal mining States and on Tribal lands, and serves as a planning and evaluation tool for the States and OSM. The States are using the inventory to assist them in planning and developing their annual reclamation program and grant application packages. As of September 30, 1989, there were approximately 8,624 priority 1 and 2 problems listed in the inventory. Proposed changes to the inventory are monitored for validity and consistency by each Field Office. This effort is coordinated by OSM Headquarters.

For Fiscal Year 1989, Congress directed that OSM reassess the AML inventory and conduct a thorough review of the existing inventory to ensure consistency in the identification and ranking of projects. This required the application of standard definitions, guidelines, and cost factors concerning identification and ranking criteria of sites in the inventory. OSM consulted with the States on this issue. OSM has completed the field review and revision of dangerous highwalls, subsidence and underground mine fires, the three problem categories accounting for 75 percent of the inventory costs. The results of that review are currently under review by the States.

As a supplement to the inventory, OSM is continuing with enhancements and refinement of a tracking system that monitors project accomplishments under the AML program. This data system will allow OSM to synthesize all State and Federal project data into a national information system and to correlate the date with the AML inventory data base.

Emergency Program

These projects provide immediate relief from hazards that threaten public safety and health. Upon notification that an emergency exists, OSM personnel will, usually within 24 hours, visit the site to verify whether the situation constitutes an emergency as defined in the Surface Mining Control and Reclamation Act. Remedial action is taken as quickly as possible to stabilize the emergency situation. From Fiscal Year 1978 through September 30, 1989, $125.2 million for 1,601 projects was obligated on Federal emergency projects. Fiscal Year 1989 emergency project obligations were $12.7 million due to an unusually wet season during that year.

OSM has made policy changes over the life of the program to assure effective program implementation. For example, it became apparent by 1985 that requests for emergency funds were expanding and not all projects met the intended definition of "emergencies." Therefore, to ensure that emergency funds were properly targeted, OSM issued new guidelines that clearly differentiated between the type of AML activity necessary to address an immediate emergency situation and reclamation work to address the non-emergency portion of a problem. The guidelines call for speedy and efficient abatement of an emergency situation, while leaving the reclamation of the site to the normal State grant process.

OSM continues to encourage the States to assume primary responsibility for all phases of the AML program including emergencies. To date, Arkansas, Kansas, Illinois, Montana, Virginia, and West Virginia have assumed the management of their emergency programs. OSM has reviewed a submission so that Alabama will have this authority sometime in Fiscal Year 1990. In Fiscal Year 1990, OSM will provide emergency funds to approved State emergency programs above the normal grant allocations. The funds are from the discretionary funds available prior to the allocation of those funds to each State.

Fiscal Year 1986 was the first full year in which the revised emergency program guidelines were applied. Total emergency project obligations were $14.3 million in Fiscal Year 1986 as compared to $25.7 million in Fiscal Year 1985. In Fiscal Year 1987, emergency project obligations were $8.9 million. Fiscal Year 1988 obligations were $10.6 million. In comparison, Fiscal Year 1989 obligations which were $12.7 million marked an increase in obligations caused primarily by a high number of landslides and flooding due to an unusually wet season during that year.

In Fiscal Year 1988, OSM investigated 303 emergency complaints. 191 complaints resulted in emergency projects; 112 did not. During Fiscal Year 1989 OSM investigated 660 emergency complaints. Of the total 660, 148 investigations resulted in emergency projects while 512 did not.

Non-Emergency Projects

Projects in States where OSM is the Regulatory Authority are managed under the Federal Reclamation Program. High priority projects involve active hazards to public health and safety. Conditions which have been addressed under the Federal program include unsafe impoundments of mine waste; unstable waste banks; subsidence in urban areas; mine or wastebank fires adversely impacting urban areas; mine related landslides; and mine discharges that threaten to degrade potable water supplies.

The Federal high-priority project effort has evolved since its inception in 1979 and the approval of State reclamation programs in 1982. Initially, OSM utilized direct Federal contracts and cooperative agreements with States to reclaim high-priority AML problems throughout the nation. With the approval of State reclamation programs, the Federal effort has been substantially reduced except for the reclamation of high-priority sites in States not having approved Title IV reclamation programs and on Tribal lands. Through Fiscal Year 1989, OSM had obligated approximately $108.3 million to reclaim 498 sites in 34 States and 14 Tribal jurisdictions. This total includes those projects for which funds were expended through cooperative agreements with the States. This process provided States with design and construction funds to address priority 1 and 2 problems, while the States prepared their reclamation program submissions. The process also enabled the States to develop the expertise and capability to administer their own construction programs. As of September 30, 1989, Fiscal Year 1989 high priority project obligations were $617,617.

Estimated Program Requirements ($000s)

	1990	1991
Emergency Projects	9,000	9,000
Non-Emergency Projects	1,500	1,000
Operations	7,544	7,757
Total	18,044	17,757

(Dollar Amounts in Thousands)

Decrease for Fiscal Year 1991	1991 Base	1991 Estimate	Inc. (+)
($)	18,257	17,757	-500
(FTE-)	195	195	____

The decrease of $500,000 takes place in high priority project funding on Tribal lands and in non-primacy States. OSM formerly had the responsibility to carry out these projects on Indian lands. Public Law 100-71, however, allowed Tribes to access their AML monies without first having an approved regulatory program. In addition, OSM has addressed most remaining priority 1 and 2 projects in the inventory on Tribal lands and in non-primacy States. Also, high priority project obligations were $616,617 in Fiscal Year 1989; an indication that less money is being required in this area. Consequently, OSM believes that the $1.0 million remaining in the base will be sufficient to address Fiscal Year 1991 demands.

The entire decrease will occur in object class 25, other services.

Justification of Program and Performance

Activity: Federal Reclamation Programs
Subactivity: Rural Abandoned Mine Program

(Dollar Amounts in Thousands)

	FY 1990 Enacted	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From 1990	Inc. (+) Dec. (-) From Base
Rural Abandoned Mine Program					
($)	12,000	12,000	2,114	-9,886	-9,886
(FTE-T)*	102	102	11	-91	-91

Authorization: 30 U.S.C. 1231, (Surface Mining Control and Reclamation Act of 1977, Sections 401(c) and 406).

Objectives:

1. Provide technical assistance to landowners and land users for the reclamation, conservation, and development of rural abandoned lands affected by past coal mining.

2. Provide cost sharing assistance for reclamation and conservation treatment.

Base Program:

The Rural Abandoned Mine Program (RAMP) is authorized by Section 406 of SMCRA to assist landowners in the reclamation, conservation, and development of rural abandoned lands affected by past coal mining. The program provides for the control and prevention of erosion and sediment damages from unreclaimed mine lands. Funds for the program are transferred to the U.S. Department of Agriculture, Soil Conservation Service (SCS), which allocates these funds to its State offices where active RAMP contracts exist. Funding priorities have been established by the SCS State offices after local SCS offices ranked the projects. Project priorities were reviewed and approved by the State Reclamation Committee, composed of OSM and State reclamation agency representatives. To ensure the proper selection of RAMP projects, OSM and SCS will review and reconcile any differences regarding priority, estimated costs, and proposed reclamation plans.

RAMP provides technical and financial assistance to landowners who voluntarily enter into 5 to 10 year contracts for the reclamation of eligible abandoned coal-mined lands and waters.

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* No OSM personnel are assigned to this subactivity.

Technical assistance includes the actual design of the reclamation project which consists of five distinct program areas: (1) program development and management; (2) project planning; (3) architectural and engineering construction design; (4) contract administration; and, (5) supervision of construction work. It also entails the inspection of reclamation adequacy and any modifications to the contract needed to complete the project. Contract modifications may be necessary to ensure that the completed project meets required specifications and standards.

Financial assistance covers the actual cost to complete the project according to contract specifications. Modifications to the contract that may require increased financial assistance include changes to the project design caused by site specific problems such as unanticipated environmental conditions. Table 9 lists the total number of contracts and amount of technical and financial assistance awarded to the States by RAMP through the end of Fiscal Year 1989.

Reclamation proposals are required for financial assistance under the program. Plans are developed by the landowner with assistance from SCS specialists. These plans set forth the objectives, and the type and amount of reclamation required. Contracts are placed with owners based on the application, priority classification, and availability of resources.

Projects are usually limited to a maximum of 120 acres, although the Secretary of Agriculture may allow for a contract covering up to 320 acres. The determining factors may be: adverse impact of acid mine drainage on adjacent farm land; need to develop publicly owned land that was adversely affected by coal mining, including land acquired for recreation, conservation, and open space benefits; protection and/or repair of public facilities such as utilities and roads; establishment of vegetative cover; and needed land grading. Continuing management to maintain the planned land use is usually recommended to ensure maximum benefit of reclamation and prevent a recurrence of problems.

Through Fiscal Year 1989, 881 contracts covering the reclamation of approximately 13,000 acres have been executed since the program's inception; of these, about 9,000 acres have been reclaimed. Additionally, over $78 million in funding has been awarded to carry out these projects, of which approximately $17.7 million remains in active contracts. Erosion control and improved water quality are among the benefits typically derived from RAMP projects.

Table 10 indicates the projected workload to be accomplished with existing funding for Fiscal Years 1990-1994, assuming that all contracts are awarded as scheduled. Technical assistance and modifications may require delaying work on certain contracts.

TABLE 9

RAMP Status Report by State
(Through September 30, 1989)

State	Contracts	Technical Assistance	Financial Assistance
Alabama	68	$1,813,424	$4,049,958
Arkansas	28	1,688,561	3,402,000
Illinois	32	1,594,838	1,324,663
Indiana	72	710,230	615,296
Iowa	27	1,440,063	4,562,447
Kansas	1	225,017	77,399
Kentucky	122	6,251,664	10,803,162
Maryland	26	976,132	2,294,293
Missouri	5	809,375	856,110
North Dakota	15	425,799	376,757
Ohio	125	5,440,782	10,202,288
Oklahoma	24	1 161,103	3,321,687
Pennsylvania	153	8,848,282	16,322,155
South Dakota	2	93,799	180,632
Tennessee	53	1 136,100	2,658,401
Texas	23	784,623	1,297,679
Virginia	18	1,243,559	2,435,124
West Virginia	71	6,772,813	11,672,490
Wyoming	16	1,302,602	1,768,017
Totals	881	$42,718,766	$78,220,558

TABLE 10

RURAL ABANDONED MINE PROGRAM (RAMP)
Projected Number of Active Contracts
Fiscal Years 1990-1994

State	FY 90	FY 91	FY 92	FY 93	FY 94
Alabama	58	49	41	35	31
Arkansas	21	18	15	13	10
Illinois	14	12	10	8	7
Indiana	43	37	32	28	24
Iowa	8	7	4	1	0
Kentucky	98	84	72	63	55
Maryland	24	22	19	17	15
North Dakota	13	11	9	8	7
Ohio	70	60	53	46	39
Oklahoma	26	22	20	17	15
Pennsylvania	30	28	26	24	22
Tennessee	29	26	24	20	18
Texas	4	3	2	1	0
Virginia	20	17	14	12	10
West Virginia	71	62	53	46	39
Wyoming	3	0	0	0	0
TOTAL-Active Contracts	532	458	394	339	292
Pre-Construction Stage	150	75	25	0	0
Construction Stage	150	150	100	58	20
Post-Construction Stage	232	233	269	281	272

The national inventory of AML projects includes entries submitted by all States with AML problems. The projects are prioritized according to Section 403 of SMCRA. OSM is committed to addressing the highest priority reclamation projects on a nationwide basis and assuring equitable distribution of the available funds among the States. Initially, the SCS selected RAMP projects without using the AML inventory. There was uncertainty that criteria used in project selection was in conformity with SMCRA. However, OSM and the SCS have been collaborating to ensure that RAMP project selection conforms with the States' overall reclamation plans. OSM and the SCS reviewed completed and in-progress RAMP projects to determine if they were included on the inventory or if they could qualify to be on it. Also, to foster consistency in the selection of priority one and two projects, OSM held sessions for SCS personnel to communicate the criteria OSM uses in determining the proper priority of projects.

To eliminate any potential conflict in setting priorities according to national needs and to eliminate duplicate Federal funding for administrative costs for reclamation, OSM prefers to allow States the lead responsibility for all non-emergency reclamation, including RAMP projects.

(Dollar amounts in thousands)

Decrease for Fiscal Year 1991	1991 Base	1991 Estimate	Dec. (+)
($)	12,000	2,114	-9,886
(FTE-T)	102	11	-91

OSM feels that administrative expenditures for RAMP are duplicative of administrative expenditures for the AML reclamation program itself. OSM prefers to rely on the State reclamation grants program as the primary delivery mechanism for reclamation services. State programs have established capabilities to address various types of reclamation projects including those carried out under RAMP. Furthermore, States have established priorities and plans for accomplishing reclamation. Given the States' increased capabilities, the need to apply AML funds to accomplish the most feasible amount of reclamation in a cost effective manner, and the importance of reducing duplicative operations, continued funding of new projects under RAMP is not requested.

The request will allow completion of ongoing projects and a phase out of the RAMP program under the Soil Conservation Service. New projects will be funded from the general AML reclamation fund.

The object class distribution of the proposed decrease is as follows:

	FTE	$(000s)
Personnel	-91	-2,417
Personnel Benefits		-456
Benefits for Former Personnel		+481
Travel		-54
Transportation		-10
Communic., Util., and Misc.		-181
Printing and Reproduction		-10
Other Services		-160
Supplies and Materials		-61
Equipment		-111
Grants		-6,904
Insurance Claims & Indemnities		-3
TOTAL	-91	-9,886

Justification of Program and Performance

Activity: Small Operator Assistance Payments

(Dollar Amounts in Thousands)

	FY 1990 Enacted	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From 1990	Inc. (+) Dec. (-) From Base
Small Operator Assistance Payments					
($)	2,000	2,000	1,500	-500	-500
FTE-T	---	---	---	---	---

Authorization: 30 U.S.C. 1257, (Surface Mining Control and Reclamation Act of 1977, Section 507(c)).

Objectives: To provide assistance to eligible small mine operators in meeting data requirements for new mining permits.

Base Program: Small Operator Assistance Payments (SOAP) are authorized by Section 507(c) of the Surface Mining Control and Reclamation Act of 1977. The Act authorizes that up to $10 million can be appropriated each year from AML fees for the purpose of SOAP. SOAP provides the regulatory authority with an avenue to assist eligible small operators in paying certain costs associated with obtaining hydrologic/geologic information that is needed to prepare coal mining permit applications. These analyses are performed by qualified public or private laboratories under contract to regulatory authorities. A eligible small mine operator is one whose annual coal production does not exceed 100,000 tons per year.

A small operator must apply to the State regulatory authority or to the Office of Surface Mining Reclamation and Enforcement and meet certain standards. Upon approval of a written application, the regulatory authority enters into a contract with a qualified laboratory to provide data and findings on existing groundwater and surface-water flows and quality, probable impact of the proposed mining operations on these existing conditions, and physical and chemical characteristics of the overburden materials for the small operator's proposed mining site. This information, generally referred to as a determination of probable hydrologic consequences and statement of overburden analysis, is required in all permit applications.

States with approved regulatory programs have the responsibility for administering SOAP and receive grants from OSM to pay qualified laboratories to provide the technical services authorized under the program. As the regulatory authority for non-primacy States, OSM has directly administered SOAP programs in Georgia, Tennessee and Washington. SOAP has assisted over 2,276 operators. Most of the SOAP activity has occurred in the Eastern coal producing States.

The following table lists States receiving SOAP assistance over a four year period.

FY 1986	FY 1987	FY 1988	FY 1989
Illinois	Illinois	Illinois	Illinois
Indiana	Indiana	Indiana	Indiana
Pennsylvania	Maryland	Pennsylvania	Maryland
West Virginia	Ohio	Tennessee	Ohio
Tennessee	Pennsylvania	Utah	Pennsylvania
	Tennessee	Virginia	Tennessee
	Utah	West Virginia	Virginia
	West Virginia		West Virginia

Between Fiscal Year 1987 through Fiscal Year 1989, SOAP obligations have been as follows:

($ in 000s)

FY 1987	FY 1988	FY 1989
2,157,545	1,592,350	1,554,000

Decrease for Fiscal Year 1991	1991 Base	1991 Estimate	Dec. (-)
	(Dollars in Thousands)		
($)	2,000	1,500	-500
(FTE-T)	---	---	---

A decrease of $500,000 is proposed for this activity in Fiscal Year 1991. OSM believes that the request of $1.5 million will be sufficient to address demands for SOAP assistance in that year. SOAP obligations for Fiscal Years 1988 and 1989 were $1.6 million and $1.6 million respectively. OSM anticipates that SOAP obligations will remain in this range through Fiscal Year 1991.

Abandoned Mine Reclamation Fund

Schedule of Amounts Available for Appropriation

	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate
Unappropriated Bal., start of year	433,301	474,635	533,763
Receipts 1/	234,494	251,900	258,900
Total Available for Appropriation	667,795	726,[illegible]35	792,663
Appropriation	-193,160	-192,[illegible]72	-149,896
Unappropriated Balance, end of year	474,635	533,673	642,767

1/ Receipts totals are estimates for Fiscal Years 1990 and 1991.

DEPARTMENT OF THE INTERIOR
Office of Surface Mining Reclamation and Enforcement
Summary of Requirements by Object Class *
(Dollar Amounts in Thousands)

Appropriation:	Abandoned Mine Reclamation Fund	1991 Base FTE	 Amount	1991 Estimate FTE	 Amount	Inc.(+) or Dec.(-) FTE	 Amount
Object Class							
	Personnel Compensation:						
11.1	Permanent Positions - FTE-P	441	12,680	354	10,356	-87	-2,324
11.3	Positions Other Than Permanent	16	303	12	210	-4	-93
11.5	Other Personnel Compensation	---	109	---	109	---	---
	Total Personnel Compensation	457	13,092	366	10,675	-91	-2,417
Other Objects							
12.1	Personnel Benefits		2,315		1,859		-456
13.0	Benefits for Former Personnel		3		484		+481
21.0	Travel and Transportation of Persons		1,050		996		-54
22.0	Transportation of Things		96		86		-10
23.1	Rental Payments to GSA		1,072		1,072		---
23.2	Rental Payments to Others		---		---		---
23.3	Comm., Utilities and Miscel. Charges		1,345		1,164		-181
24.0	Printing and Reproduction		116		106		-10
25.0	Other Services		13,938		13,490		-448
26.0	Supplies and Materials		412		351		-61
31.0	Equipment		524		413		-111
41.0	Grants, Subsidies and Contributions		159,604		119,200		-40,404
42.0	Insurance, Claims & Indemnities		3		---		-3
	TOTAL REQUIREMENTS	457	193,570	366	149,896	-91	-43,674

* Includes totals for the Rural Abandoned Mine Program (RAMP). The entire reduction in this appropriation is for RAMP.

DEPARTMENT OF THE INTERIOR
Office of Surface Mining Reclamation and Enforcement
Abandoned Mine Reclamation Fund
Program and Financing
(In Thousands of Dollars)

Identification code 14-5015-0-1-302		1989 act.	1990 est.	1991 est.
Program by Activities				
00.0101	State Reclamation Program Grants...	232,041	181,786	117,000
00.0201	Federal Reclamation Programs.......	48,672	37,429	25,898
00.0301	Small Operator Assistance Payments.	1,554	2,276	1,500
00.0401	General Administration............	5,578	5,081	5,498
00.0501	Reimbursables.....................	295	---	---
10.0001	Total Obligations.................	288,140	226,572	149,896
Financing:				
	Offsetting collections from:			
11.0001	Federal funds...............	-177	---	---
14.0001	Non Federal sources.........	-118	---	---
17.0001	Recovery of prior year obligations.................	-48,936	---	---
21.4001	Unobligated balance available Start of Year..............	-79,549	-33,800	---
24.4001	Unobligated balance available End of Year................	33,800	---	---
39.0001	Budget Authority..............	193,160	192,772	149,896
Budget Authority:				
40.0001	Appropriation (special fund)...	193,160	192,772	149,896
42.0001	Transfers from other agencies..	---	---	---
43.0001	Appropriation (adjusted).......	193,160	192,772	149,896
Relation of Obligations to Outlays:				
71.0001	Obligations incurred, net......	287,845	226,572	149,896
72.4001	Obligated balance, Start of Year........................	369,964	387,248	413,361
74.4001	Obligated balance, End of Year.	-387,248	-413,361	-376,342
78.0001	Adjustments in Unexpired Accts.	-48,936	---	---
90.0001	Outlays.......................	221,625	200,459	186,915

DEPARTMENT OF THE INTERIOR
Office of Surface Mining Reclamation and Enforcement
Abandoned Mine Reclamation Fund
Object Classification (In Thousands of Dollars)

Identification code 14-5015-0-1-302		1989 act.	1990 est.	1991 est.
	Personnel Compensation:			
111.101	Full-time permanent positions	13,910	9,756	9,898
111.301	Positions other than full-time permanent..................	300	201	204
111.501	Other Personnel Compensation..	119	101	102
111.901	Total Personnel Compensation..	14,329	10,058	10,204
	Personnel Benefits:			
112.101	Civilian.....................	2,352	1,775	1,801
113.001	Benefits for Former Personnel.	---	---	---
121.001	Travel and Transportation of Persons.................	1,092	1,012	969
122.001	Transportation of Things......	26	80	80
123.101	Rental Payments to GSA........	1,022	1,135	1,072
123.201	Rental Payments to Others.....	54	---	---
123.301	Communications, Utilities and Miscellaneous Charges.......	930	1,073	1,073
124.001	Printing and Reproduction.....	119	100	100
125.001	Other Services................	19,483	13,790	13,407
126.001	Supplies and Materials........	413	350	321
131.001	Equipment....................	677	410	355
141.001	Grants, Subsidies and Contributions...............	235,100	184,687	118,400
143.001	Interest and Dividends........	1	---	---
199.001	Subtotal Obligations, OSM	275,598	214,470	147,782

DEPARTMENT OF THE INTERIOR
Office of Surface Mining Reclamation and Enforcement
Abandoned Mine Reclamation Fund
Object Classification (In Thousands of Dollars)

Identification code 14-5015-0-1-302		1989 act.	1990 est.	1991 est.
Allocation to the Soil Conservation Service				
	Personnel Compensation:			
311.101	Full-time Permanent Positions.	2,864	2,728	458
311.301	Positions other than full-time permanent..............	104	99	6
311.501	Other Personnel Compensation..	45	61	7
311.901	Total Personnel Compensation..	3,013	2,888	471
	Personnel Benefits:			
312.101	Civilian......................	536	514	58
313.001	Benefits for Former Personnel.	3	3	484
321.001	Travel and Transportation of Persons..................	89	81	27
322.001	Transportation of Things......	17	16	6
323.201	Rental Payments to Others.....	---	---	---
323.301	Communications, Utilities and Miscellaneous Charges.......	337	272	91
324.001	Printing and Reproduction.....	17	16	6
325.001	Other Services................	263	243	83
326.001	Supplies and Materials........	97	91	30
331.001	Equipment.....................	184	169	58
341.001	Grants, Subsidies and Contributions...............	7,983	7,806	800
342.001	Insurance Claims and Indemnities.................	3	3	---
399.901	Subtotal, Allocations.........	12,542	12,102	2,114
999.901	Total Appropriation Obligations.................	288,140	226,572	149,896

DEPARTMENT OF THE INTERIOR
Office of Surface Mining Reclamation and Enforcement
Abandoned Mine Land Reclamation Fund
Personnel Summary

Identification Code 14-1801-0-1-302	1989 Actual	1990 Estimate	1991 Estimate
Total number of Permanent Positions	351	351	351
Total Compensable Workyears:			
Full Time Equivalent Employment	390	355	355
Full Time Equivalent of Overtime and Holiday Hours	1	1	1
Full Time Equivalent of Youth Program/Developmental Positions	6	6	6

Allocation to the Soil Conservation Service	1989 Actual	1990 Estimate	1991 Estimate
Total number of Permanent Positions	104	96	11
Total Compensable Workyears:			
Full Time Equivalent Employment	110	102	11
Full Time Equivalent of Overtime and Holiday Hours	0	0	0

DUAL APPROPRIATION

The following activities are funded in both the R&T and AML appropriations in the amounts shown below. These figures represent the total cost for the activity and the distribution of those costs. Functions performed and services acquired under these activities are agency wide in scope. However, these are apportioned between the two appropriations to reflect the agency wide distribution of these functions/services.

		FY 1990 Enacted	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
General Administration:					
Executive Direction					
R&T	($)	1,589	1,634	1,754	+120
	(FTE-T)	30	30	30	---
AML	($)	873	906	986	+80
	(FTE-T)	18	18	18	---
Total	($)	2,462	2,540	2,740	+200
	(FTE-T)	48	48	48	---
Administrative Support					
R&T	($)	6,487	6,592	6,807	+215
	(FTE-T)	85	85	85	---
AML	($)	1,711	1,801	1,933	+132
	(FTE-T)	46	46	46	---
Total	($)	8,198	8,393	8,740	+347
	(FTE-T)	131	131	131	---
General Services					
R&T	($)	4,894	5,458	5,529	+71
	(FTE-T)	0	0	0	0
AML	($)	2,424	2,579	2,579	---
	(FTE-T)	0	0	0	---
Total	($)	7,318	8,037	8,108	+71
	(FTE-T)	0	0	0	0

Justification of Program and Performance

Activity: General Administration
Subactivity: Executive Direction

(Dollar Amounts In Thousands)

	[illegible] Enacted To Date	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From 1990	Inc. (+) Dec. (-) From Base
Executive Direction					
R&T ($)	1,589	1,634	1,754	+165	+120
(FTE-T)	30	30	30	---	---
AML ($)	873	906	986	+113	+ 80
(FTE-T)	18	18	18	---	---
TOTAL ($)	2,462	2,540	2,740	+278	+200
(FTE-T)	48	48	48	---	---

Authorization: 30 U.S.C. 1295 (Surface Mining Control and Reclamation Act of 1977, Section 112).

Objective: Provide executive leadership, direction, policy and program management for all areas of responsibility for the Office of Surface Mining Reclamation and Enforcement.

Base Program: The Executive Direction subactivity includes the salaries and expenses for the offices of the Director and two Deputy Directors and the Director's staff offices for Congressional Liaison, Equal Employment Opportunity, External Affairs, Public Affairs, Operations Evaluation Staff, and Regulatory Development and Issues Management.

The total request for Executive Direction is $2,740,000 and 48 FTEs. The request is divided between the Regulation and Technology and Abandoned Mine Reclamation Fund appropriations. The following is a discussion of the total requested for Executive Direction in both appropriations.

Director and Director's Staff Offices

The Director determines program policy and provides direction for all OSM regulatory and reclamation programs. The Director establishes policy, makes decisions on organizational structure, budget and legislative proposals, and determines overall program strategy and implementation. The Director also exercises line supervision over the Deputy Directors and Chiefs of Washington staff offices. The Director's staff offices are responsible for: the activities associated with the Congressional liaison office; a public affairs program; an office of external affairs which maintains an outreach program with industry, States, Tribes, environmental groups and other organizations interested in surface coal mining activities; implementation of equal employment opportunity programs; evaluation of OSM operations; issue analysis and internal control reviews; correspondence management; and development of rules and regulations to implement statutory requirements and OSM policy.

The External Affairs Office was established to provide access to the Director's office for groups such as environmental organizations, industry, State regulatory authorities, and citizens action groups. It is responsible for ensuring that the views of external groups are considered in agency actions.

A major accomplishment of the External Affairs Office is the establishment of the Excellence in Surface Mining Reclamation awards, a program designed to promote through recognition a commitment among operators to restore the land to its original condition after mining activities have been completed. On June 23, 1989, the Secretary made award presentations to a select group of nine American coal mining operations at the Third Annual Excellence in Surface Mining National Awards.

In Fiscal Year 1990, regulatory development will continue to be an important function. A primary agency objective is to achieve a stable and consistent regulatory environment by improving the rulemaking process, and consequently reducing the likelihood of future legal challenges. OSM has established an outreach program to secure the involvement of major constituent groups in the rulemaking process. The group members include OSM personnel, industry, regulatory authority and environmental group representatives. The input from external groups serves as one of the bases for establishing general regulatory development priorities for the agency.

Various approaches to rulemaking have proven to be useful aids to regulatory development in potentially controversial areas and has helped to achieve a more stable and consistent regulatory environment. One approach is consultation with opposing constituent groups as a preliminary step in the rulemaking process. This consultation does not supplant the existing rulemaking process, but rather complements it. When successful, consultative rulemaking efforts produce rules that are more likely to accomplish efficient and effective enforcement of SMCRA, and reduce the event of costly litigation and repromulgation of the rules. This process, while not appropriate for all areas of regulatory development, does contribute to identifying and addressing debatable points and issues before they reach a stage where litigation would be the only method of resolution. In Fiscal Year 1990, OSM expects to select certain rules for development through a consultative process prior to publication of proposed rules in the Federal Register. OSM will co-sponsor a national symposium with the American Bar Association and the Mineral Law institute of the University of Kentucky to consider ideas and proposals for certain rules. OSM expects representatives from States, industry, and environmental organizations to participate.

Eighteen final rules have been published by OSM since March 1988. The following rules were critical to implementing administration policies:

- Moisture Content - Allows operators to take a deduction from abandoned mine land reclamation fees for moisture added to coal subsequent to extraction.

- Inspection Frequency - Defines "abandoned site" and allows State regulatory authorities to reduce the inspection frequency for such sites, thus freeing inspectors to spend more time at active sites.

- Ten Day Notice - Establishes a uniform standard by which OSM will evaluate State responses to Federal notices of possible violations of SMCRA, thus ensuring that OSM will accept State decisions unless the State was arbitrary, capricious, or abused its discretion under its State program.

- Ownership and Control - Defines "owns or controls" and expands the review of a permit applicant's environmental compliance record to ensure that violations do not receive new permits.

- Prime Farmland - Clarifies an exemption from prime farmland requirements for surface facilities associated with underground mines.

- Termination of Jurisdiction - Clarifies when regulatory jurisdiction under the Surface Mining Act ends at specific sites.

- Permit Rescission Rule - Establishes guidelines for rescinding improvidently issued coal mine permits.

- Permit to Reclaim Rule - Removes the requirement for coal mine operators to obtain permits when only reclamation activities remain to be accomplished at the mine site. The rule will substantially cut paperwork, and mine owners' associated costs, without reducing environmental protection.

- Exemption for Incidental Mining - Establishes guidelines for the extraction of coal incidental to the extraction of other minerals.

The Valid Existing Rights rule (VER) was proposed on December 27, 1988. During the public comment period which closed on April 24, 1989, in excess of 4,500 responses were received. This rule, in an effort to establish a national standard for VER, presented two options for determining VER: 1) an owner can provide evidence of ownership of the coal and authority to mine by proposed methods; and 2) an owner had made a good faith effort to obtain all mining permits prior to August 3, 1977 (date of enactment of SMCRA), or the date the protected area was created, whichever is later. On June 21, 1989 the VER rule was withdrawn to provide the Department additional opportunity to study and resolve the issue.

OSM's prior regulatory reform effort, which involved changes to 670 individual sections in various parts of its technical regulations, is still underway. The respective lawsuits filed in opposition to these changes were consolidated by Judge Thomas Flannery of the U.S. District Court and divided into three rounds. The Court remanded a number of the rules and required repromulgation. Rulemaking action was initiated in 1985 and 1986 and is near completion. State primacy was not affected by decisions made as a result of the Court rulings; however, revisions to the Federal regulations will result in changes to corresponding State provisions.

Deputy Director for Operations and Technical Services

The Deputy Director for Operations and Technical Services manages the activities of Headquarters programmatic and technical divisions as well as those carried out by field offices and their consolidated operations in Pittsburgh and Denver. The Assistant Directors for Program Policy, Eastern Field Operations, and Western Field Operations report to the Deputy Director.

The Deputy Directorate establishes policy for and provides guidance on all operational State and Tribal assistance activities, State program oversight and administration of Federal regulatory programs. It is also responsible for performance of environmental and economic analyses; management of Federal reclamation projects, development and administration of training programs to meet the technical requirements of OSM, other Federal agencies, and the States; and provision of other technical support services to State and Federal regulatory and reclamation programs. Only the immediate Headquarters office of the Deputy Director is included in this subactivity.

Deputy Director for Administration and Finance

The Deputy Director for Administration and Finance manages operations associated with resource and manpower allocation, information management systems, assessments and collections, and fee compliance. The Assistant Directors for Budget and Administration, Finance and Accounting, and Information Systems Management report to the Deputy Director.

The Deputy Directorate is responsible for financial management functions including: the collection of civil penalties; payroll, travel and cash management; fee collection and appropriation accounting; fee compliance and audit activities; and financial management systems. It also provides financial services to Headquarters and field offices, including technical assistance on the implementation of Federal financial policies and regulations. The Directorate also administers the collection of Abandoned Mine Reclamation fees; the assessment and collection of civil penalties; cash management systems; and carries out a program to evaluate all OSM units and oversees the implementation of recommendations resulting from these evaluations.

In addition, the agency's information management systems operations are carried out under this Deputy Directorate. The Deputy Director is also responsible for developing policy and guidance for budget activities, personnel, management services and planning activities.

Only the immediate Headquarters office of the Deputy Director is included in this subactivity.

(Dollar Amounts in Thousands)

Increase for Fiscal Year 1991		1991 Base	1991 Estimate	Inc. (+)
R+T	($)	1,634	1,754	+120
	(FTE-T)	30	30	---
AML	($)	906	986	+80
	(FTE-T)	18	18	---
TOTAL	($)	2,540	2,740	+200
	(FTE-T)	48	48	---

Excellence in Education

Interior supports the President's goal of raising the standard of education in America. In addition to Indian education programs, the Department has a variety of non-Indian education initiatives that include activities in support of elementary, secondary and post-secondary school programs as well as programs for the general public regarding the Nation's natural resources. For OSM, a total of $200,000 is being proposed for the excellence in education effort.

To achieve this goal, OSM will:

- expand a current effort to inform school children of the dangers associated with abandoned mine shafts by distributing the leaflet "WARNING--Abandoned Mines Can Be Dangerous" to additional school districts in the East and West and televise public service announcements on TV in selected areas.
- Place "A Page in Time" video produced for OSM depicting the history of coal mining and land reclamation with Modern Talking Pictures, Inc., the nation's largest and best known free lending library of educational audiovisual materials. Modern Talking Pictures will duplicate the master video tape in sufficient quantities to meet the requests of school districts, and will perform the distribution, documentation and administration of the program to ensure availability of the video tape.
- Update a successor to the special report on the first 10 years under Title 5 of SMCRA. GPO has sold nearly all the copies of this special report it reserved for sale.

The additional $200,000 funding will be apportioned as follows: $120,000 in R&T and $80,000 in AML. The increase will occur in Object Class 25, Other Services.

Justification of Program and Performance

Activity: General Administration
Subactivity: Administrative Support

(Dollar Amounts In Thousands)

		FY 1990 Enacted	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From 1990	Inc. (+) Dec. (-) From Base
Administrative Support						
R&T	($)	6,487	6,592	6,807	+320	+215
	(FTE-T)	85	85	85	---	---
AML	($)	1,711	1,801	1,933	+222	+132
	(FTE-T)	46	46	46	---	---
TOTAL	($)	8,198	8,393	8,740	+542	+347
	(FTE-T)	131	131	131	---	---

Authorization: 30 U.S.C. 1295 (Surface Mining Control and Reclamation Act of 1977, Section 712).

Objective: Maintain administrative support in the functional areas of Personnel; Financial Management; Planning, Budget and Management Analysis; Management Services; and Information Systems Management.

Base Program: The Administrative Support subactivity includes the immediate offices of the Assistant Directors for Budget and Administration, Finance and Accounting, and Information Systems Management. Also included are the support divisions of: Personnel; Financial Management; Budget, Planning and Management Analysis; Management Services, and the Information Systems Management staff.

The total request for Administrative Support is $8,740,000 and 131 FTEs. The request is divided between the Regulation and Technology and Abandoned Mine Reclamation Fund appropriations. The following is a discussion of the total requested for Administrative Support in both appropriations.

Assistant Director for Finance and Accounting

The Assistant Director for Finance and Accounting is responsible for three program areas, including the collection of civil penalties and AML fees; OSM's audit activities; and financial management. The Assistant Directorate provides a focus for financial systems management operations that must be responsive to a variety of internal and external demands. Most of its activities are funded under the Assessments and Collections and Fee Compliance subactivities. The immediate office of the Assistant Director for Finance and Accounting and the Division of Financial Management are funded under this Administrative Support subactivity.

The Division of Financial Management is responsible for payroll, travel and cash management, AML fee accounting, and all aspects of administrative accounting including the management of ABACIS, the administrative accounting system. The Division develops and controls accounting and financial reporting systems and also provides financial services to Headquarters and field staff, including technical assistance on the implementation of federal financial and accounting policies and regulations. The Department of the Treasury's wire transfer system for letter of credit drawdowns on OSM grants is also administered by the Division of Financial Management.

Assistant Director for Budget and Administration

The Assistant Director for Budget and Administration develops policy and guidelines for budget formulation and execution, personnel, management services, and management analysis. The Assistant Director provides management and supervision to the following Headquarters offices financed by this subactivity.

1. The Division of Budget, Planning and Management Analysis formulates, plans, and executes bureau-wide budget activities and provides policy, central coordination, and uniform procedures for budget execution. The Division also provides Headquarters and the field with training and guidance in budget formulation and execution. In addition, the Division carries out a management analysis program that includes preparation of short and long-term analyses on OSM issues and program activities that have budgetary impact.

2. The Division of Personnel is responsible for the development and implementation of agency-wide personnel policy; implementation of the Agency's conflict of interest procedures; and for the Agency's personnel security program. The Division provides full staffing and personnel services to OSM Headquarters employees.

3. The Division of Management Services provides Headquarters with direct support in the areas of procurement, space and property, telecommunications, vehicle fleet management, mail handling, safety management, and other general office services. The Division develops and maintains administrative systems relating to correspondence and paperwork management, forms management, and clearance of reporting and record-keeping requirements. The Division also develops agency-wide policy on management services issues and initiatives.

Assistant Director for Information Systems Management

The Assistant Directorate for Information Systems Management was established in Fiscal Year 1987. The Assistant Director is responsible for:

- Managing a full range of computerized information systems necessary to support the Agency's regulatory efforts, including the management and analysis of data and statistics supporting OSM program activities.

- Providing OSM program staff with technical support in the development and operation of information and computerized technical processing systems.

- Developing Agency-wide data processing policies and plans, including both long and short-range planning.

- Overseeing all phases of systems development from identifying needs through systems design, testing, training, and procurement, to operational assistance and implementation.

- Developing and reviewing ADP procurement requests for Agency contracting and procurement, and managing of ADP contracts after award.

- Managing the development and maintenance of microcomputer systems, office automation systems, and the development and implementation of telecommunication systems.

The staff in this directorate includes a mixture of disciplines but is mainly comprised of systems analysts, computer specialists, contract management specialists and appropriate administrative and clerical support.

Coal Data Management Information System

Information system development and implementation is a major effort since it affects all aspects of the agency's operations. OSM's long term information systems goals as envisioned in the development of a Coal Data Management Information System (CDMIS), are to achieve an integrated computerized support system that links Title IV and Title V information and provides OSM field installations and State regulatory authorities with full access to a central data base which will support all phases of SMCRA enforcement. Simply stated, OSM's goal is to develop a comprehensive information systems capability to support and facilitate OSM's administration and enforcement responsibilities under SMCRA.

The organizational structure of OSM has resulted in the development of numerous independent single-purpose computer systems to assist the agency in its task of implementing SMCRA. Each system was individually designed to meet an identified, specific need of the various offices of OSM that maintain and manage coal mining information. As such, these systems were created without an overall design for data standardization, integration, or interface capabilities.

CDMIS will alleviate these problems. The CDMIS concept is that of an integrated system that addresses all programmatic information system needs of OSM. It will provide the framework for standardizing and integrating data in all current OSM information systems, and the need to respond to future information needs.

The extent of information management required to conduct OSM's mission for all coal mining operations in the U.S. is staggering. As the Federal regulatory and primary oversight authority for approved State programs, OSM must have the capability to efficiently access and analyze any coal mining data collected in support of its mission objectives. Enforcement of SMCRA requires the continuing interaction of Federal and State authorities. Consistency and continuity of data management is essential to making this two-tiered process work effectively.

CDMIS development and implementation will occur in a phased manner over a multi-year period. The goal of the system will be to integrate various modules or subsystems that will replace the current "balkanized" information systems.

Current Status/FY 90

System concept development is completed. CDMIS is now in the Systems Analysis stage of the Development Phase. The selected CDMIS development alternative is characterized by decentralized computing power, combined with centralized management of a reference data base, dissemination of nationwide data standards, and development of core software. One of the main reasons for selecting this development alternative is the possibility for rapid deployment with a low level of management risk.

System analysis activities are underway in both the AML Receivable and Collection (FEEBACS) and the Mine Inspection, Collections and Scheduling (MICAS) applications. MICAS was previously called DECA. A systems analysis prototype for FEEBACS will be completed during FY 90 and preparations will be made to design and implement the application in FY 91. The functional and data requirements for MICAS will be completed in FY 90. Systems analysis activity has also been started on the AML Grants and Reclamation Application area.

A work group has been formed to develop the Common Identifier approach. The group has begun analyzing current system data and key identifiers. During FY 90 defining and documenting the Common Identifier Approach will be completed.

The initiative to establish a CDMIS data administration program will begin in FY 90 and will be ongoing through the life of the CDMIS project.

When completed, the CDMIS design will implement CDMIS by decentralizing computing power to all organizational entities involved in the enforcement of SMCRA. Each entity will have a micro-based computer to run CDMIS and other local functions as desired. OSM will create a central data base for national use and will define data standards for the data base. On a regular basis (e.g., daily), selected data in the local computers will be uploaded to the central computer and made available to authorized users for cross-entity inquiries.

OSM will develop core software that will be distributed to all entities for CDMIS use. Entities will be able to define additional local data bases and software for their own use. If these conform to OSM data standards, entities will be able to combine core data with local data for reporting and inquiry.

Development and establishment of a set of standards will serve as the basis for subsequently developing the core software and data bases to meet local data requirements. Once standards are developed, rapid development of the core software will be possible.

FY 90 efforts will include:

> Systems analysis- functional requirements will be defined in sufficient detail to determine system and software specifications. Systems analysis for AML Receivables and Inspection Scheduling and Enforcement will be initiated;
>
> Standardization of the operating environment- hardware, software, and telecommunications;

Development of a universal identification code- a code that can be used to identify all permits/mines must be developed; and

Data standardization and integration- CDMIS will have separate functional applications containing standardized data that can be integrated through a standard data base management system.

FY 91

The System Analysis phase, initiated in FY 90, will be continued in FY 91. Also, system design alternatives will be evaluated and a system design proposed. A logical data model and data base design will be developed. Other products to be developed during the System Design stage include a revised Life Cycle Strategy and a System Decision Paper 2.

It is envisioned that prototyping will be used to expedite system analysis. A prototype approach will be used to further refine the functional requirements.

Hardware acquisition will be concentrated in FY 91-92. Expenditures for hardware, software and facility maintenance will begin in FY 91 and continue throughout the life of the CDMIS systems.

FY 92 and Beyond

System design is to be completed and approved early in FY 92. Efforts will then be concentrated on system construction, testing, installation, and training. Maintenance support will have to be started once a systems is up and running.

A structured, incremental, approach whereby systems analysis, design, and development will take place for each application on its own time table will be used. Doing so will allow the benefits associated with CDMIS to begin to accrue to OSM at an earlier date.

The development schedule for CDMIS, is as follows:

Phase	Initiation	Completion
Analysis	FY 89	FY 91
Design	FY 91	FY 92
Construction and Acquisition	FY 91	FY 94
User Acceptance and Implementation	FY 90	FY 95
Maintenance	FY 91	continuing

Contractor support will be required in systems analysis (FY 1990-91, $1.3 million), design and development (FY 1990-94, $6.2 million), training (FY 91-98, $288,000) and maintenance (FY 92-98, $2.4 million).

(Dollar Amounts in Thousands)

Increase for Fiscal Year 1991		1991 Base	1991 Estimate	Inc. (+)
R&T	($)	6,592	6,807	+215
	(FTE-T)	85	85	---
AML	($)	1,801	1,933	+132
	(FTE-T)	46	46	---
TOTAL	($)	8,393	8,740	+347
	(FTE-T)	131	131	---

Coal Data Management Information System

$97,000 of the requested increase ($65,000 in R&T and $32,000 in AML) provides funding for OSM's planned schedule for CDMIS development. In order to ensure full integration of its systems development effort with other OSM program activities, OSM extended the CDMIS effort over a multi-year time frame, in which the system will be implemented in modules. In Fiscal Year 1989, CDMIS funds were used for overall systems planning and analysis work on the first CDMIS module. This subsystem will automate the inspection and scheduling functions. Fiscal Year 1990 base funds will fund additional systems analysis of the first module and user requirements definition for the second module - AML receivables and collections. The increase will provide for initiation of the other CDMIS components - data standardizations and integration, development of a standardized operating environment, and development of a universal mine registry numbering system.

Women and Minority Initiative

Interior's goal is to involve women and minorities as employees, especially at management levels, and program participants in an effort to reach beyond minimum equal opportunity requirements. Interior bureaus are continually seeking ways to enhance the recruitment, training, and advancement within the Department of women and minorities, particularly in such critical professional areas as engineering, science, accounting and computer programming. For OSM, a total of $250,000, ($150,000 in R&T and $100,000 in AML) is being proposed for the women and minorities effort. Specifically, OSM intends to:

Career Development

- Participate in OPM's management development program for GS-12's and above,
- Establish a Director's Award for EEO Leadership, to be given to the supervisor/manager demonstrating the greatest success in advancing the status of women and minorities,
- Provide leadership skills training for women (graded GS-13 and higher),
- Provide career development training for employees graded GS 7-9, and
- Prepare employees for entry level professional positions, such as auditors.

Recruitment

- Develop a quality brochure for recruitment,
- Participate in employment conferences, meet with college level placement counselors, undertake recruitment trips to minority institutions, and
- Participate at job fairs.

The entire increase of $347,000 over the base will occur in Object Class 25, Other Services.

Justification of Program and Performance

Activity: General Administration
Subactivity: General Services

(Dollar Amounts In Thousands)

	FY 1990 Enacted	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From 1990	Inc. (+) Dec. (-) From Base
General Services					
R&T ($)	4,894	5,458	5,529	+635	+71
(FTE-T)	---	---	---	---	---
AML ($)	2,424	2,579	2,579	+155	---
(FTE-T)	---	---	---	---	---
TOTAL ($)	7,318	8,037	8,108	+790	+71
(FTE-T)	---	---	---	---	---

Authorization: 30 U.S.C. 1295, (Surface Mining Control and Reclamation Act of 1977, Section 712).

Objective: This activity finances certain categories of general expenses best accommodated in a single overhead subactivity.

Base Program: This subactivity finances overhead expenses that are most efficiently budgeted and managed through central accounts. Included in these types of expenses are: office space rental (standard level user charges); FTS (telephone services); security; health units; Federal Register expenses; other printing expenses and copy machine operations; general purpose vehicle maintenance and replacement; employee relocation expenses; and the costs associated with interagency agreements for general services.

The total request for General Services is $8,108,000. The request is divided between the Regulation and Technology and Abandoned Mine Reclamation Fund appropriations.

Increase for Fiscal Year 1991	1991 Base	1991 Estimate	Inc. (+)
	(Dollar Amounts in Thousands)		
R&T ($)	5,458	5,529	+71
(FTE-T)	---	---	---
AML ($)	2,579	2,579	---
(FTE-T)	---	---	---
TOTAL ($)	8,037	8,108	+71
(FTE-T)	---	---	---

Take Pride in America

The Department encourages volunteer stewardship in a variety of ways, including the national Take Pride in America campaign. Take Pride reaches out to millions of Americans through its national awards program, grassroots activities, and public service announcements. The campaign's message is simple: America's natural resources belong to all of us, and we have a responsibility to leave them in better condition for future generations. For the OSM, a total of $71,000 is being proposed for Take Pride in America.

Take Pride in America is a national public awareness campaign designed to encourage wide use of the lands and resources shared by all Americans. Many Federal, State, local and private sector organizations are involved in this program. The focus of the campaign is at the grassroots level. The campaign is not intended to be a vast federal program, but rather to provide a unifying theme for thousands of local and individual activities. The campaign is implemented through national public service announcements, public-private partnerships, a national awards program and other activities. The campaign seeks to provide a boost for stewardship action and awareness efforts around the nation.

The entire increase in this subactivity will occur in Object Class 25, Other Services.

DEPARTMENT OF THE INTERIOR
Office of Surface Mining Reclamation and Enforcement
Detail of Permanent Employment

Identification Code 14-1802-0-2-302 14-5015-0-1-302	1989 Actual	1990 Estimate	1991 Estimate
Executive Level V..................	1	1	1
Subtotal.......................	1	1	1
ES-5.............................	2	2	2
ES-4.............................	3	3	3
ES-3.............................	4	4	4
ES-2.............................	0	0	0
ES-1.............................	1	1	1
Subtotal...........................	10	10	10
GS/GM-15...........................	43	43	43
GS/GM-14...........................	113	112	113
GS/GM-13...........................	221	220	221
GS-12..............................	312	311	312
GS-11..............................	66	66	67
GS-10..............................	1	1	1
GS-9...............................	54	54	54
GS-8...............................	12	12	12
GS-7...............................	63	63	63
GS-6...............................	72	72	72
GS-5...............................	88	88	88
GS-4...............................	36	36	36
GS-3...............................	5	5	5
GS-2...............................	0	0	0
GS-1...............................	0	0	0
Subtotal..........................	1,086	1,083	1,087
Total permanent employment at end of Fiscal Year	1,097	1,094	1,098

ADVISORY AND ASSISTANCE SERVICES

UNITED STATES DEPARTMENT OF THE INTERIOR
OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT
Regulation and Technology

(In Thousands of Dollars)

Account Title and Symbol		1989	1990	1991
Regulation and Technology: No. 14-1801-0-1-302				
I. Personnel Appointments	B.A.	5.0	5.0	5.0
	Oblig.	2.0	5.0	5.0
	Outlays	2.0	5.0	5.0

Justification for request: To provide for technical and/or expert advice when needed.

Prepared: January 4, 1990
S. Savoy
343-4716

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUDGET JUSTIFICATIONS, F.Y. 1991

March 3, 1849

BUREAU OF INDIAN AFFAIRS

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26-625 886

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

Budget Justification, Fiscal Year 1991
Congressional Submission

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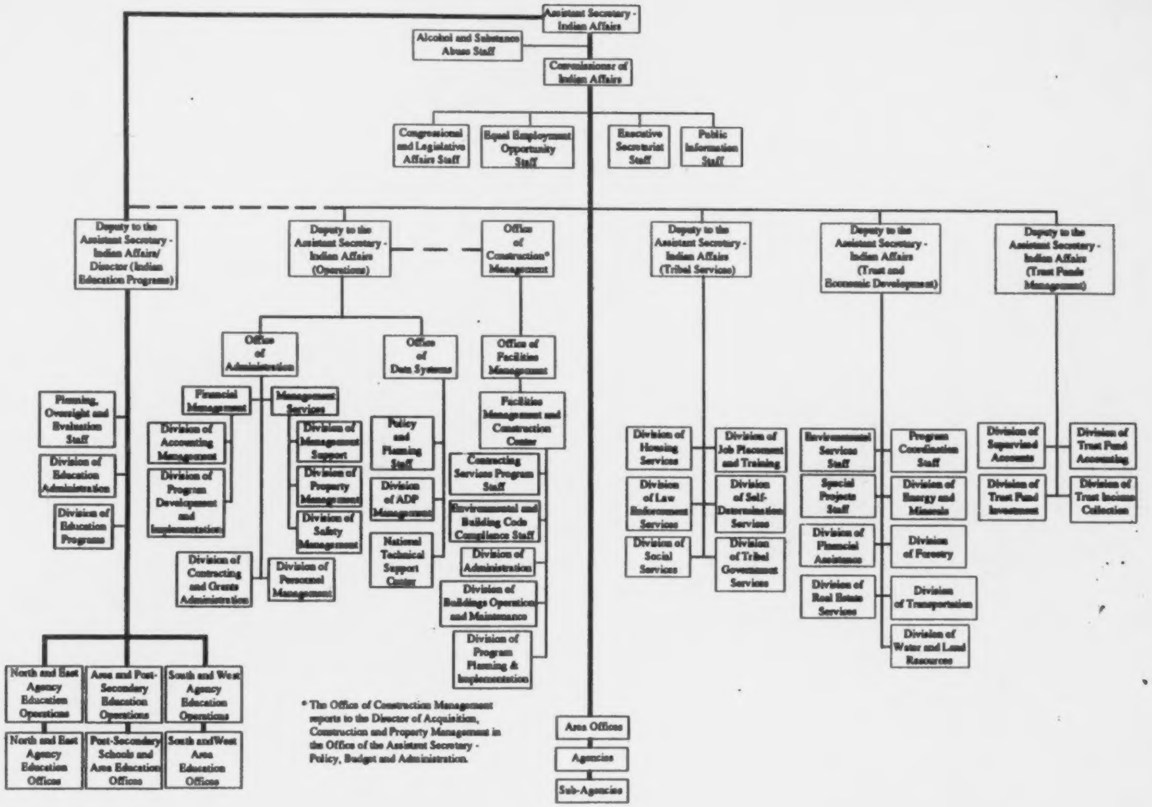
Assistant Secretary - Indian Affairs
Alcohol and Substance Abuse Staff
Commissioner of Indian Affairs
Congressional and Legislative Affairs Staff
Equal Employment Opportunity Staff
Executive Secretariat Staff
Public Information Staff
Deputy to the Assistant Secretary - Indian Affairs/ Director (Indian Education Programs)
Planning, Oversight and Evaluation Staff
Division of Education Administration
Division of Education Programs
North and East Agency Education Operations
Area and Post-Secondary Education Operations
South and West Agency Education Operations
North and East Agency Education Offices
Post-Secondary Schools and Area Education Offices
South and West Area Education Offices
Deputy to the Assistant Secretary - Indian Affairs (Operations)
Office of Administration
Financial Management
Division of Accounting Management
Division of Program Development and Implementation
Management Services
Division of Management Support
Division of Property Management
Division of Safety Management
Division of Contracting and Grants Administration
Division of Personnel Management
Office of Data Systems
Policy and Planning Staff
Division of ADP Management
National Technical Support Center
Office of Construction* Management
Office of Facilities Management
Facilities Management and Construction Center
Contracting Services Program Staff
Environmental and Building Code Compliance Staff
Division of Administration
Division of Buildings Operations and Maintenance
Division of Program Planning & Implementation
Area Offices
Agencies
Sub-Agencies
Deputy to the Assistant Secretary - Indian Affairs (Tribal Services)
Division of Housing Services
Division of Law Enforcement Services
Division of Social Services
Division of Job Placement and Training
Division of Self-Determination Services
Division of Tribal Government Services
Deputy to the Assistant Secretary - Indian Affairs (Trust and Economic Development)
Environmental Services Staff
Special Projects Staff
Division of Financial Assistance
Division of Real Estate Services
Program Coordination Staff
Division of Energy and Minerals
Division of Forestry
Division of Transportation
Division of Water and Land Resources
Deputy to the Assistant Secretary - Indian Affairs (Trust Funds Management)
Division of Supervised Accounts
Division of Trust Fund Investments
Division of Trust Fund Accounting
Division of Trust Income Collection

* The Office of Construction Management reports to the Director of Acquisition, Construction and Property Management in the Office of the Assistant Secretary - Policy, Budget and Administration.

Bureau of Indian Affairs

GENERAL STATEMENT

The Bureau of Indian Affairs, created in the War Department in 1824, was transferred to the Department of the Interior in 1849. The history of the relationship between Indian tribes and the U. S. Government reveals that the mission of the BIA was founded on a government-to-government relationship and a trust responsibility emanating from treaties and other agreements with Native groups. The bureau, therefore, as an agent of the U. S. Government, recognizes a fundamental responsibility to American Indian tribes, Alaska Native groups, and the tribal form of government. The bureau's mission is to: (1) recognize and preserve the inherent rights of tribal self-government; (2) strengthen tribal capacity for self-government; (3) provide resources for tribal government programs; (4) protect the rights of Indian people in dealing with other governmental entities and the private sector; and (5) fulfill and execute the Federal Government's responsibility for trust resources and property.

The Snyder Act of 1921 (42 Stat. 208; 25 U.S.C. 13) provides substantive law for appropriations covering the activities of the Bureau of Indian Affairs. The scope and character of the authorizations contained in this Act were broadened by the Indian Reorganization Act of 1934 (45 Stat. 984; 25 U.S.C. 461 et seq.); by the Indian Financing Act of 1974, as amended (88 Stat. 77; 25 U.S.C. 1451 et seq.); by the Indian Self-Determination and Education Assistance Act of 1975, as amended (88 Stat. 2203; 25 U.S.C. 450); by Title XI of the Elementary and Secondary Education Amendments Act of 1978, as amended (92 Stat. 2316; 25 U.S.C. 2001 et seq.); by the Indian Child Welfare Act of 1978 (92 Stat. 3069; 25 U.S.C. 1901 et seq.); by the Tribally Controlled Community College Assistance Act of 1978, as amended (85 Stat. 646; 25 U.S.C. 640a); and by the Anti-Drug Abuse Act of 1986, as amended (25 U.S.C. 2401 et seq.).

The Central Office of the Bureau of Indian Affairs is located in Washington, D.C., but the majority of headquarters staff work in Albuquerque, New Mexico with smaller staff contingents located in other western states. The Bureau has 12 area offices, 83 agencies, 3 sub-agencies, 6 field stations, 3 irrigation project offices, 2 post-secondary institutions, 111 day schools, 57 boarding schools, and 14 dormitories. These totals include 78 schools which are funded by the bureau and operated by tribes under contract pursuant to P.L. 93-638 or under grants pursuant to P.L. 100-297.

The bureau provides services directly or through contract to 949,000 Indians, Eskimos, and Aleuts who reside in 31 states. The bureau carries out the government-to-government functions for the Federal Government with 310 Indian tribes in the "lower 48 states" and with 197 Alaskan Native organizations. The bureau administers 42,385,031 acres of tribally-owned land and 10,226,180 acres of individually-owned land which is held in trust status. It also administers 442,755 acres of federally-owned land.

The following pages provide a comparison between the appropriations enacted for FY 1990, the adjustments pursuant to the Deficit Reduction Act, the FY 1991 base, and the FY 1991 request.

SUMMARY TABLE

(Dollars in thousands)

	Appropriation Currently Available 1990	FY 1991 Estimate	(+)(-) From Enacted
Appropriation:			
Federal Funds			
Operation of Indian Program...........$	1,021,488	1,018,185	-3,303
(FTE)	(11,204)	(11,224)	(+20)
Construction...........................$	136,850	103,099	-33,751
(FTE)	(654)	(649)	(-5)
(FTE Allocation to BOR...........	(5)	(0)	(-5)
(Non-add FTE Allocation from FHWA)	[573]	[573]	[--]
Miscellaneous Payments to Indians.....$	191,864	52,407	-139,457
(FTE)	(19)	(19)	(--)
Revolving Fund for Loans..............$	--	--	--
Indian Loan Guaranty & Insurance Fund.$	4,718	11,487	+6,769
Navajo Rehabilitation Trust Fund......$	800	--	-800
Subtotal, Appropriations Requested....$	1,355,720	1,185,178	-170,542
(FTE)	(11,882).	(11,892)	(+10)
Permanent and Trust Funds:			
Miscellaneous Permanents..............$	55,071	68,141	+13,070
(FTE)	(473)	(483)	(+10)
Trust Funds...........................$	395,319	377,214	-18,105
Cooperative Fund (Papago).............$	1,054	868	-186
Quarters Operation & Maintenance......$	6,330	6,330	--
(FTE)	(123)	(123)	(--)
Non-add FTE Firefighting Allocation from BLM.............(FTE)	[445]	[445]	[--]
Budget Authority, Total BIA ....$	1,813,494	1,637,731	-175,763
(FTE)	(12,478)	(12,498)	(+20)

Highlights of the FY 1991 BIA Funding Request

The FY 1991 budget request for the Bureau of Indian Affairs proposes to reverse a decade-long trend of reducing resources available to carry out the numerous programs for the benefit of Indians which are administered by the Department of the Interior through the Bureau of Indian Affairs. Over the past twenty years the service population of the BIA has doubled, while funding for the Operation of Indian Program has remained essentially level. The FY 1991 budget for the Operation of Indian Programs includes an increase of over $30 million above the FY 1991 base level which will substantially strengthen program activities in almost every area.

Coupled with the growth in the service population, legislative actions have also increased demands on the budget in the areas of education, drug abuse prevention and law enforcement programs, and self-determination services. The proposed budget addresses many of the recently-enacted legislative initiatives; recognizes long-standing issues of internal control problems raised by the Office of the Inspector General and through internal control reviews; and provides increased funding for programs carried out at the agency level either directly by the bureau or through contracts with tribes and tribal organizations.

Comprehensive summary tables displaying funding and staffing levels are included with this request. The significant increases and decreases are as follows:

Education

An increase of $16,038,000 above the FY 1991 base is requested for School Operations. The budget includes funds (+$8.8 million) for the second increment of a phased increase in salaries for teachers and counselors to better enable the bureau to effectively compete for the recruitment and retention of skilled professionals. The FY 1991 budget retains the FY 1990 Congressional increase of $3.2 million for the Gifted and Talented program, for a total resource level of $3.6 million.

To provide opportunities to upgrade the skills of existing education staff and to orient approximately 500 new employees, $1 million is requested to provide training in areas such as effective school management, leadership skills, methods for fostering parental involvement in the education of their children, and teaching techniques which have proven successful in raising the achievement of Indian children. The bureau will also initiate a demonstration program at 10 schools using the nationally recognized "Parents as Teachers" program which will emphasize early childhood education and enhance parental and community involvement in the educational process.

A total of $20 million is requested to cover the administrative costs of tribal contractors and grantees who operate bureau-funded schools. This represents an increase of $6 million above the FY 1991 base.

The request for the Johnson-O'Malley Education Assistance programs of $20,548,000 represents a reduction of $3.1 million below the FY 1991 base. The bureau's first priority for improving educational attainment of Indian children is to strengthen those schools funded by the bureau. The Johnson-O'Malley program provides funds for supplementary programs for students enrolled in public schools.

In continuing education, the budget includes $16 million for operating grants and endowment funds for 22 community colleges which are operated by tribes or tribal organizations.

Tribal Services

An increase of $12.1 million is requested for Tribal Services programs. A program of technical assistance grants to tribes, as authorized by the Self-Determination Amendments, P.L. 100-472, is proposed to be funded at a level of $4.4 million. Included in this grant request is a continuation of the small tribe core management grant program.

A total of $93.1 million is requested for social services programs, which includes $82.1 million for welfare assistance grants and $8.9 million for Indian Child Welfare Act grants.

Increases in tribe/agency social service programs include $3.5 million to staff and operate the emergency shelters constructed under the authority of the Anti-Drug Abuse Act; $2 million to expand child protection efforts on reservations; $4 million to support enhanced law enforcement efforts bureauwide.

Natural Resources Development

To improve and enhance the productivity of Indian lands, $2 million is requested for eradication of noxious weeds on agricultural and range lands and $1 million is proposed to continue the prairie dog control program. An increase of $2 million, for a total program level of $10.2 million is requested to expand the forest development program. These funds will continue the reforestation backlog reduction effort and provide silviculture treatment for those lands previously reforested. An increase is also requested for forest management inventories and plans which will allow the bureau to address the needs of additional forested lands which have been newly acquired by tribes.

A net reduction of $4.8 million is proposed for Wildlife and Parks. Of the decreases, $2.3 million is taken against rights protection implementation in Western Washington,; $300,000 against Columbia River fisheries programs; and $873,000 against funding for the Voight Case fisheries.

Trust Responsibilities

To protect trust property and financial assets held in trust for Indian tribes and individuals, a net increase of $6.4 million is requested for trust programs. This includes an increase of $2.5 million to clean up hazardous waste sites; an increase of $2.3 million to improve operations of the land title and records offices; an increase of $1 million to address the large backlog of Indian estates awaiting probate action; and $2.8 million for financial trust services. The increase for financial trust services will support additional audits by third parties of funds held in trust by the bureau for tribes and individual Indians and will support needed organizational improvements which have been identified by the Office of the Inspector General and by outside auditors as essential if the bureau is to adequately fulfill its fiduciary responsibility.

General Administration

To address the numerous internal control problems which have been found through internal reviews and external audits, the bureau is requesting $1 million to establish an office of audit and evaluation. This office will be charged with conducting programmatic and financial reviews, working with the Office of the Inspector General and the General Accounting Office in audits conducted by these organizations; and ensuring that necessary corrective actions are institutionalized within the bureau.

To replace outdated automatic data processing equipment and to improve services to the field, an increase of $2.3 million is requested for the Office of Data Systems. Virtually every aspect of program service delivery and federal accountability is dependent upon computer systems, and the bureau lags far behind in acquiring state-of-the-art technology.

An increase of $1 million for education program management will be used to expand the participation of volunteers in the bureau-funded educational system; to develop research instruments for the conduct of longitudinal studies on student progress; and to support monitoring and evaluation teams who will conduct on-site, in-depth reviews of 45 bureau-funded schools annually.

To move toward the Department's goal of significantly improving the presence of women and minorities in the managment levels of the organization, an increase of $200,000 is requested for the consolidated training program. The bureau will undertake a multi-faceted training and career awareness program in cooperation with the Equal Employment Opportunity staff.

War on Drugs

Interior has an important role as part of the President's War on Drugs. Interior bureaus are involved in stopping narcotics at the border, eliminating marijuana growth and trafficking on public and Indian lands, and educating everyone, especially our youth, about the danger of drug use. The Secretary issued a statement this year outlining the three areas in which the Department of the Interior can make significant contributions to the National Drug Control Stratety -- eradication, interdiction, and education. (A fourth area -- the drug free workplace -- is presented as a base adjustment in this justification.)

For the Bureau of Indian Affairs a total of $16.8 million is being proposed for the war on drugs effort, an increase of $4.3 million over the base. The types of activities carried out by the bureau include: substance abuse counseling in bureau-funded schools, which will be supplemented in FY 1991 by the introduction of the nationally-recognized Drug Abuse Resistance Education (DARE) program which is funded through law enforcement; training for law enforcement and judicial services personnel; construction of juvenile detention facilities; staffing and operation of emergency shelters and juvenile detention facilities; eradication of marijuana plants; and investigation, interdiction and prevention activities by bureau and tribal law enforcement staff.

Irrigation Construction

Following a report issued by the Office of the Inspector General on the bureau's management of the Safety of Dams program and in order to facilitate timely corrective action, responsibility for this activity has been transferred to the Bureau of Reclamation where funds are budgeted for work on bureau dams in need of repair. Associated with this transfer of function is a reduction of 10 FTE and the associated staff costs.

Buildings and Utilities

For construction of new facilities and repair and renovation of existing buildings, $35.3 million is requested. These funds will provide for the completion of the Pine Ridge High School, construction of Dunseith Elementary School; begin a program of repairs and renovation for law enforcement facilities; and continue the on-going effort of facilities improvement and repairs which focuses mainly on schools.

Road Construction and Road Maintenance

This program is budgeted at $37.3 million which will provide $26.4 million for scheduled road maintenance and emergency repairs and $10.9 million for sealing roads constructed with funds from the Highway Trust Fund. Direct appropriations to the bureau are supplemented by $80 million annually from the Department of Transportation.

Construction Contract Support

To meet the overhead costs of tribal contractors associated with the administration of bureau-funded construction projects, $7 million is requested.

Miscellaneous Payments to Indians

The request for Miscellaneous Payments to Indians totals $52.4 million. Included within this amount is $12.3 million for implementation of the remaining unfunded portions of the Aleutian-Pribilof Settlement Act; $1.3 million to continue work under the White Earth Land Settlement Act and the Old Age Assistance Act; and $38.8 million to meet the FY 1991 costs of water rights settlements which were enacted in 1988.

Indian Loan Guaranty and Insurance Fund

Funds are requested in FY 1991 to implement the Supplemental Serety Bond program which was authorized under amendments to the Indian Financing Act. Also included in the request is $2.9 million to increase the reserve for losses and $3.3 million for payment of interest subsidies on guaranteed loans.

Permanent Appropriations and Trust Funds

In addition to those activities financed annually by direct appropriations, operation of Indian irrigation and power systems, the Alaska Resupply operation, and federal employees' quarters operation and maintenance activities are supported by collections from users.

The bureau holds in trust approximately $1.7 billion of funds belonging to Indian tribes and individual Indians. These funds represent awards from court cases, income from trust land, and special appropriations provided by Congress. The income from the investment of these funds, which is estimated to be $377 million in FY 1991 is available through a permanent appropriation.

Summary

The total budget estimate for the Bureau of Indian Affairs for FY 1991 is $1.6 billion which includes $1.2 billion in direct federal appropriations and $453 million in permanent and trust funds. This represents a decrease of $186 million in direct appropriations below the FY 1990 enacted level. The decrease, however, is essentially the result of funding projects with one-time costs in FY 1990 such as conversion of tribal contracts to calendar year funding ($54 million) and non-recurring payments for Indian settlements ($136 million).

The request for direct appropriations represents a net increase of $185 million over the FY 1991 base which is divided as follows: Operation of Indian Programs (+$30.4 million); Construction (+$97.6 million); Miscellaneous Payments to Indians (+$51.1 million); Indian Loan Guaranty and Insurance Fund ($6.7 million); and the Navajo Rehabilitation Trust Fund (-$.8 million).

BUREAU OF INDIAN AFFAIRS
Authorizing Statutes

General Authorizations:

25 U.S.C. 13 (The Snyder Act of November 2, 1921), P.L. 67-85

25 U.S.C. 461 et seq. (The Indian Reorganization Act of 1934), P.L. 73-383

25 U.S.C. 450 (The Indian Self-Determination and Education Assistance Act), P.L. 93-638, as amended by P.L. 100-472

In addition to the general authorizations listed above, the following programs have specific authorizing legislation as shown below:

EDUCATION

School Operations	25 U.S.C. 2001-2019 (The Education Amendments of 1978), P.L. 95-561, as amended 1979, 1984, 1985, 1988 and 1989
	25 U.S.C. 2008 (The Quarter Blood Amendment), P.L. 99-228
	25 U.S.C. 2401 et seq., Part 4 of the Anti-Drug Abuse Act of 1986, Subtitle C (The Indian Alcohol and Substance Abuse Prevention and Treatment Act of 1986), P.L. 99-570, as amended
Johnson-O'Malley	25 U.S.C. 452 (The Johnson-O"Malley Act of April 16, 1934) P.L. 73-167
Continuing Education	25 U.S.C. 1801 et seq. (The Tribally Controlled Community College Assistance Act), P.L. 95-471, as amended

TRIBAL SERVICES

Aid to Tribal Government	25 U.S.C. 1721 et seq. (The Maine Indian Claims Settlement Act of 1980), P.L. 96-420
	25 U.S.C. 1401 et seq. (The Indian Judgment Funds Distribution Act of 1973
Tribal Courts	25 U.S.C. 1721 et seq. (The Maine Indian Claims Settlement Act of 1980), P.L. 96-420
Social Services	25 U.S.C. 1901 et seq. (Indian Child Welfare Act), P.L. 95-608
	(Welfare Reform Act), P.L. 100-485
Law Enforcement	18 U.S.C. 3055 (Act of June 25, 1948), P.L. 80-772
	25 U.S.C. 2401 et seq., Part 4 of the Anti-Drug Abuse Act of 1986, Subtitle C (The Indian Alcohol and Substance Abuse Prevention and Treatment Act of 1986), P.L. 99-570, as amended
Employment Development	25 U.S.C. 309 (Vocational Training), P.L. 84-959, as amended

NAVAJO-HOPI SETTLEMENT

25 U.S.C. 640 et seq (The Navajo-Hopi Settlement Act of December 22, 1974), P.L. 93-531, as amended

ECONOMIC DEVELOPMENT

Economic Development	25 U.S.C. 1523 (The Indian Financing Act of 1974), P.L. 93-262, as amended
Indian Arts and Crafts Board	25 U.S.C. 305 (The Act of August 27, 1935), P.L. 74-355

TRUST RESPONSIBILITIES

Indian Rights Protection	28 U.S.C. 2415 (Statute of Limitations; The Indian Claims Limitation Act of 1982), P.L. 97-394
	16 U.S.C. 3101 (The Alaska National Interest Lands Conservation Act), P.L. 96-487
	43 U.S.C. 1601 (The Alaska Native Claims Settlement Act), P.L. 92-203
Real Estate Services	25 U.S.C. 176 (Reorganization Plan No. 3 of 1946), 60 Stat. 1100
	25 U.S.C. 311 (The Act of March 3, 1901) P.L. 56-832, 31 Stat. 1084
	25 U.S.C. 393 (The Act of March 3, 1921), P.L. 66-359, 41 Stat. 1232
	25 U.S.C. 2201-2211 (Indian Land Consolidation Act), P.L. 97-459, as amended by P.L. 98-608
Financial Trust Services	25 U.S.C. 162a (The Act of June 24, 1938), P.L. 75-714

NATURAL RESOURCES

Forestry	25 U.S.C. 406 & 407 (The Act of June 25, 1910), 36 Stat. 857
	18 U.S.C. 1853, 1855, and 1856, 62 Stat. 787 and 788
Wildlife and Parks	16 U.S.C. 3631 (The U.S./Canada Pacific Salmon Treaty Act of 1985), P.L. 99-5, 99 Stat. 7
	16 U.S.C. 3101 (The Alaska National Interest Lands Conservation Act of 1980), P.L. 96-487, 94 Stat. 2371
	42 U.S.C. 1996 (The American Indian Religious Freedom Act of 1978), P.L. 95-341, 92 Stat. 469
Minerals and Mining	P.L. 100-557, Umatilla Basin Project Act

CONSTRUCTION

Buildings and Utilities	25 U.S.C. 631(2)(12)(14) (The Act of April 19, 1950), 64 Stat. 44 as amended by P.L. 85-740
	25 U.S.C. 465 (The Act of June 18, 1934), 48 Stat. 985
	25 U.S.C. 318a (The Act of May 26, 1928), P.L. 70-520, 45 Stat. 750
Roads	23 U.S.C. 104(b)(5)(A) (The Surface Transportation and Uniform Relocation Assistance Act of April 2, 1987), P.L. 100-17, 101 Stat. 145
Land Acquisition	25 U.S.C. 465, (An Act to Settle Indian Land Claims in the Town of Gay Head, MA), P.L. 100-95

MISCELLANEOUS PAYMENTS TO INDIANS

Eastern Indian Land Claims Settlement Fund	25 U.S.C. 1701 (The Act of September 30, 1978), P.L. 95-395, 92 Stat. 813
White Earth Reservation Claims Settlement Act	25 U.S.C. 331 (The Act of March 24, 1986), P.L. 99-264, 100 Stat. 61
Old Age Assistance Claims Settlement Act	25 U.S.C..2301 (The Act of October 19, 1984), P.L. 98-500, 98 Stat. 2317
Gila Bend Indian Res. Lands Replacement Act	43 U.S.C. 1521, et seq. (The Act of October 20, 1986), P.L. 99-503, 100 Stat. 1798
Hoopa-Yurok	25 U.S.C. 1300i (Hoopa-Yurok Settlement Act) P.L. 100-580
San Luis Rey Water Rights Settlement	P.L. 100-675 (San Luis Rey Indian Water Rights Settlement Act)
Colorado Ute Water Rights Settlement	P.L. 100-585 (Colorado Ute Indian Water Rights Settlement Act of 1988), 102 Stat 2973
Salt River (Pima-Maricopa)	P.L. 100-512 (Salt River Pima-Maricopa Indian Community Water Rights Settlement Act of 1988), 102 Stat 2549
Aleutian & Pribilof Islands Restitution	P.L. 100-383 (The Aleutian and Pribilof Islands Restitution Act), 102 Stat 910
Puyallup Settlement	25 U.S.C. 1773 (Puyallup Tribe of Indians Settlement Act of 1989), P.L. 101-41, 103 Stat 83

MISCELLANEOUS PERMANENT APPROPRIATIONS & TRUST FUNDS

Claims and Treaty Obligations	Act of February 19, 1831 Treaty of November 11, 1794 Treaty of September 24, 1857 Acts of March 2, 1889; June 10, 1896; June 21, 1906
O & M, Indian Irrigation Systems	25 U.S.C. 162a (The Act of November 4, 1983, P.L. 98-146, 60 Stat. 895
Power Systems, Indian Irrigation Projects	25 U.S.C. 162a (The Act of November 4, 1983, P.L. 98-146, 60 Stat. 895, 65 Stat. 254
Lummi Diking Project	25 U.S.C. 386a (The Act of September 17, 1965), P.L. 89-190, 79 Stat. 821
Cooperative Fund, Papago	25 U.S.C. 386a (Section 313, Southern Arizona Water Rights Settlement Act), P.L. 97-293, 96 Stat. 1274-1285
Miscellaneous Trust Funds	25 U.S.C. 123 et seq. (The Act of May 18, 1916), P.L. 64-80, 39 Stat. 158

OPERATION AND MAINTENANCE OF QUARTERS

5 U.S.C. 5911 (Federal Employees Quarters and Facilities Act of August 20, 1964), P.L. 88-459, as amended by P.L. 98-473 and P.L. 100-446

INDIAN LOAN GUARANTY AND INSURANCE PROGRAM

25 U.S.C. 1451 et seq. (The Indian Financing Act of April 12, 1974), P.L. 93-262, as amended by P.L. 98-449 and P.L. 100-442

Appropriation Summary Statement

BUREAU OF INDIAN AFFAIRS

Appropriation: Operation of Indian Programs

The Operation of Indian Programs appropriation consists of a wide range of services provided to Indian tribes, Alaskan Native groups, and individual Native Americans. Special emphasis is placed on tribal participation and involvement. Activities that support these services are:

1. Education - This activity provides funding for the operation of bureau, and tribal grant or contract elementary and secondary schools. Through the continuing education component, financial assistance is provided to Indian students to pursue post-secondary education opportunities. Funds are also made available to support community adult education programs and for the operation of tribally-controlled community colleges.

2. Tribal Services - This activity provides support for many local government activities such as law enforcement, tribal courts, welfare assistance, and employment development programs.

3. Navajo-Hopi Settlement Program - This activity funds range restoration and fencing on the lands partitioned to the two tribes as part of the Settlement Act.

4. Economic Development - This activity provides technical assistance and grants to assist individual Indians and tribes to secure financing to improve economic conditions on the reservations.

5. Natural Resources Development - This activity provides for the conservation, rehabilitation, development, enhancement, and use of Indian land, water, mineral, and other resources.

6. Trust Responsibilities - This activity provides for the protection of Indian rights and property, and for the management of assets held in trust for Indian tribes and individuals.

7. Facilities Management - This activity provides for the maintenance and operation of bureau facilities and for payments to the General Services Administration for bureau-leased space.

8. General Administration - This activity includes executive direction, administrative services, safety management, automatic data processing services, employee compensation payments, construction management, and education program management.

9. Tribe/Agency Operations - This is a major subactivity in each of the above activities (with the exception of Facilities Management). Funds support agency staff and tribal contracts to carry out the full range of bureau responsibilities at the local level. Funding priorities for all of the programs included in Tribe/Agency Operations are determined by the local agency superintendent in consultation with tribal officials.

Reimbursable Programs - These programs include reimbursement from states for school lunches for Indian children; funds granted to the bureau by other federal agencies to carry out special service programs for Indians; and for miscellaneous goods and services provided to others.

Appropriations Language

DEPARTMENT OF THE INTERIOR

BUREAU OF INDIAN AFFAIRS

Operation of Indian Programs

For operation of Indian programs by direct expenditure, contracts, cooperative agreements, and grants including expenses necessary to provide education and welfare services for Indians, either directly or in cooperation with States and other organizations, including payment of care, tuition, assistance, and other expenses of Indians in boarding homes, institutions, or schools; grants and other assistance to needy Indians; maintenance of law and order; management, development, improvement, and protection of resources and appurtenant facilities under the jurisdiction of the Bureau of Indian Affairs, including payment of irrigation assessments and charges; acquisition of water rights; advances for Indian industrial and business enterprises; operation of Indian arts and crafts shops and museums; development of Indian arts and crafts, as authorized by law; for the general administration of the Bureau of Indian Affairs, including expenses in field offices, [$1,035,534,000, including $54,000,000 for conversion of tribal contracts and agreements to a calendar year basis as authorized by section 204(d)(1) of Public Law 100-472 (100 Stat. 2291), and] $1,018,185,000, of which not to exceed [$71,393,000] $66,224,000 for higher education scholarships, adult vocational training, and assistance to public schools under the Act of April 16, 1934 (48 Stat. 596), as amended (25 U.S.C. 452 et seq.), shall remain available for obligation until September 30, [1991 and of which $2,180,000 for litigation support shall remain available for obligation until expended] 1992, and the funds made available to tribes and tribal organizations through contracts authorized by the Indian Self-Determination and Education Assistance Act of 1975 (88 Stat. 2203; 25 U.S.C. 450 et seq.) shall remain available until September 30, [1991] 1992: Provided, That this carryover authority does not extend to programs directly operated by the Bureau of Indian Affairs unless the tribe(s) and the Bureau of Indian Affairs enter into a cooperative agreement for consolidated services; and for expenses necessary to carry out the provisions of section 19(a) of Public Law 93-531 (25 U.S.C. 640(d)18 (a)), [$1,002,000] $1,027,000, to remain available until expended: Provided further, That none of the funds appropriated to the Bureau of Indian Affairs shall be expended as matching funds for programs funded under section 103(b) (2) of the Carl D. Perkins [: Provided further, That $200,000 of the funds made available in this Act shall be available for cyclical maintenance of tribally owned fish hatcheries and related facilities: Provided further, That none of the funds in this Act shall be used by the Bureau of Indian Affairs to transfer funds under a contract with any third party for the management of tribal or individual Indian trust funds until the funds held in trust for such tribe or individual have been audited and reconciled to the earliest possible date, the results of such reconciliation have been certified by an independent party as the most complete reconciliation of such funds possible, and the tribe or individual has been provided with an accounting of such funds: Provided further, That $250,000 of the amounts provided for education program management shall be available for a grant to the Close Up Foundation: Provided further, That if the actual amounts required in this account for costs of the Federal Employee Retirement System in fiscal year 1990 are less than amounts estimated in 1991 budget documents, such excess funds may be transferred to "Construction" and "Miscellaneous Payments to Indians" to cover the costs of the retirement system in those accounts: Provided further, That for the purpose of enabling Indian reservation residents in Arizona who are eligible for General Assistance and who have dependent children to participate and succeed in Job Corps training, the Bureau shall pay the full State AFDC A-2 grant level]. (Department of the Interior and Related Agencies Appropriations Act, 1990.)

Justification of Proposed Language Changes

BUREAU OF INDIAN AFFAIRS

Operation of Indian Programs

1. Deletion: ", including $54,000,000 for conversion of tribal contracts and agreements to a calendar year basis as authorized by section 204(d) (1) of Public Law 100-472 (100 Stat. 2291), and"

This language is proposed for deletion as the conversion from fiscal year to calendar year contracting for self-determination contractors will occur in fiscal year 1991.

2. Deletion: "and of which $2,180,000 for litigation support shall remain available for obligation until expended"

This language is proposed for deletion as the Bureau will be able to obligate the full amount requested for litigation support during the 1991 fiscal year.

3. Deletion: ": Provided further, That $200,000 of the funds made available in this Act shall be available for cyclical maintenance of tribally owned fish hatcheries and related facilities"

This language is proposed for deletion as no funds are requested for cyclical maintenance of fish hatcheries.

4. Deletion: ": Provided further, That none of the funds in this Act shall be used by the Bureau of Indian Affairs to transfer funds under a contract with any third party for the management of tribal or individual Indian trust funds until the funds held in trust for such tribe or individual have been audited and reconciled to the earliest possible date, the results of such reconciliation have been certified by an independent party as the most complete reconciliation of such funds possible, and the tribe or individual has been provided with an accounting of such funds"

This language is proposed for deletion as the Bureau of Indian Affairs will begin the required audits in FY 1990 and will continue such audits during FY 1991. The bureau will transfer only those funds which have been audited to the contractor.

5. Deletion: ": Provided further, That $250,000 of the amounts provided for education program management shall be available for a grant to the Close Up Foundation"

This language is proposed for deletion as no funds are requested in the budget for a grant to the Close Up Foundation.

6. Deletion: ": Provided further, That if the actual amounts required in this account for costs of the Federal Employee Retirement System in fiscal year 1990 are less than amounts estimated in 1991 budget documents, such excess funds may be transferred to "Construction" and "Miscellaneous Payments to Indians" to cover the costs of the retirement system in those accounts"

This language is proposed for deletion as the funds for the Federal Employees Retirement System are included in all of the program activities in the FY 1991 budget request.

7. Deletion: ": Provided further, That for the purpose of enabling Indian reservation residents in Arizona who are eligible for General Assistance and who have dependent children to participate and succeed in Job Corps training, the Bureau shall pay the full State AFDC A-2 grant level"

This language is proposed for deletion as it provides special treatment for a small number of Indian clients which is not available to other households eligible for general assistance payments.

Appropriation Language Citations

BUREAU OF INDIAN AFFAIRS

Appropriations: Operation of Indian Programs

1. For operation of Indian programs by direct expenditure, contracts, cooperative agreements and grants

25 U.S.C. 13
25 U.S.C. 450f(a) and 450h(a)
31 U.S.C. Chapter 63

25 U.S.C. 13 provides for direct operation of various federal programs for Indians throughout the United States.

25 U.S.C. 450f(a) directs the Secretary, upon the request of any Indian tribe, to enter into a contract or contracts to plan, conduct, and administer programs which the Secretary is otherwise authorized to administer.

31 U.S.C. Chapter 63 provides procedures to be followed in the preparation of federal contracts, grants, and cooperative agreements.

2. including expenses necessary to provide education and welfare services for Indians, either directly or in cooperation with States and other organizations, including payment of care, tuition, assistance, and other expenses of Indians in boarding homes, institutions or schools; grants and other assistance to needy Indians

25 U.S.C. 309 and 309a
25 U.S.C. 452-457
25 U.S.C. 640b
25 U.S.C. 1801-1815
25 U.S.C. 2001-2020
25 U.S.C. 2401-2416
25 U.S.C. 2431-2434

25 U.S.C. 309 and 309a authorizes vocational training and counseling programs and appropriations therefor.

25 U.S.C. 452-457 authorizes contracts for educational and welfare services.

25 U.S.C. 640b authorizes grants to the Navajo Community College.

25 U.S.C. 1801-1815 authorizes the award of grants to Tribally-Controlled Community Colleges.

25 U.S.C. 2001-2020 provides for the operation of elementary and secondary schools, either directly or by contract.

25 U.S.C. 2401-2416 authorizes coordinated efforts to address alcohol and substance abuse problems.

25 U.S.C. 2431-2434 authorizes special alcohol and substance abuse programs targeted for Indian youth.

3. maintenance of law and order

25 U.S.C. 13
25 U.S.C. 2441-2442
25 U.S.C. 2451-2455

25 U.S.C. 13 authorizes the employment of Indian police and judges for the suppression of trafficking in intoxicating liquor and deleterious drugs.

25 U.S.C. 2441-2442 authorizes the control of illegal narcotics traffic on the Papago reservation and authorizes the eradication of marijuana plants on Indian lands.

25 U.S.C. 2451-2455 authorizes law enforcement training, the operation of juvenile detention centers, and the development of a model Indian juvenile code.

4. management, development, improvement, and protection of resources and appurtenant facilities under the jurisdiction of the Bureau of Indian Affairs

7 U.S.C. 1651-1656
16 U.S.C. 583, 590a, 590f, and 594
25 U.S.C. 13
25 U.S.C. 372
25 U.S.C. 500

7 U.S.C. 1651-1656 provides for the protection of the livestock industry from losses caused by the poisonous weed Halogeton Glomeratus.

16 U.S.C. 583, 590a, 590f, and 594 provides for forest management, soil and moisture conservation, and for the protection of lands from fire, disease or insects.

25 U.S.C. 13 provides for the management, development, improvement, and protection of Indian lands and resources.

25 U.S.C. 372 provides for determination of heirs, sale and disposition of allotments of deceased Indians, and for leasing of allotments.

25 U.S.C. 500 provides for acquisition and organization of a reindeer industry for Alaskan Natives.

5. including payment of irrigation assessments and charges, acquisition of water rights

25 U.S.C. 13, 381, 385
49 Stat. 887
52 Stat. 80
54 Stat. 707

25 U.S.C. 13 provides for the extension, improvement, operation, and maintenance of existing Indian irrigation systems and for the development of water supplies.

25 U.S.C. 381 provides for the use of water and distribution thereof.

25 U.S.C. 385 provides for the establishment of maintenance charges and further provides that federal expenditures shall be reimbursable where

Indians have adequate funds to repay the government.

49 Stat. 887 authorizes the Secretary to enter into an agreement with Middle Rio Grande Conservancy District for maintenance and operation costs on reclaimed Pueblo Indian lands.

52 Stat. 80 amends the rate of payments of irrigation construction costs of the Wahpeto Irrigation Project.

54 Stat. 707 provides for payment of costs of providing additional water for the Wahpeto Irrigation Project.

6. advances for Indian industrial and business enterprises

25 U.S.C. 13
25 U.S.C. 1451-1543

25 U.S.C. 13 authorizes industrial assistance and advancement to be provided by the Bureau of Indian Affairs.

25 U.S.C. 1451-1543 authorizes technical assistance, direct loans, interest subsidies, guaranteed loans, and grants to Indian tribes and individuals.

7. operation of Indian arts and craft shops and museums; development of Indian arts and crafts, as authorized by law

25 U.S.C. 305-305c

25 U.S.C. 305-305c established the Indian Arts and Crafts Board to promote the economic welfare of Indian tribes and individuals through the development of arts and crafts and through the expansion of the market for such products.

8. for the general administration of the Bureau of Indian Affairs, including such expenses in field offices

25 U.S.C. 13

25 U.S.C. 13 authorizes general and incidental expenses in connection with the administration of Indian Affairs.

9. $1,018,185,000, of which not to exceed $66,224,000 for higher education scholarships, adult vocational training, and assistance to public schools under the Act of April 16, 1934 (48 Stat. 596), as amended (25 U.S.C. 452 et seq.), shall remain available for obligation until September 30, 1992

25 U.S.C. 13a

25 U.S.C. 13a authorizes the carryover of funds which were not obligated and expended prior to the beginning of the fiscal year succeeding the fiscal year for which such sums were appropriated.

10. and the funds made available to tribes and tribal organizations through contracts authorized by the Indian Self-Determination and Education Assistance Act of 1975, as amended (88 Stat. 2203; 25 U.S.C. 450 et seq.) shall remain available until September 30, 1992: Provided, That this carryover authority does not extend to programs directly operated by the Bureau of Indian Affairs unless the tribe(s) and the Bureau of Indian Affairs enter into a cooperative

agreement for consolidated services

25 U.S.C. 13a

25 U.S.C. 13a authorizes the carryover of funds which were not obligated and expended prior to the beginning of the fiscal year succeeding the fiscal year for which such sums were appropriated.

12. and for expenses necessary to carry out the provisions of section 19(a) of Public Law 93-531 (25 U.S.C. 640d-18(a)), $1,027,000, to remain available until expended

25 U.S.C. 640(d)-18(a)

25 U.S.C. 640(d)-18(a) authorizes the Secretary to reduce livestock in the former joint use area and to institute conservation practices to improve the grazing potential of the area.

13. Provided further, That none of the funds appropriated to the Bureau of Indian Affairs shall be expended as matching funds for programs funded under section 103(b)(2) of the Carl D. Perkins Vocational Education Act

This limitation prevents duplication of funding for vocational educational programs which are funded under separate authority.

BUREAU OF INDIAN AFFAIRS
Summary of Requirements
(Dollar Amounts in Thousands)

Appropriation: Operation of Indian Programs

	FTE	Amount	FTE	Amount
Appropriation enacted, 1990....................			11,253	$1,035,534
Reduction pursuant to P.L. 99-177..............			-49	- 14,046
Adjusted appropriation, 1990...................			11,204	$1,021,488
Adjustments to base:				
Adjustment for 1990 impact of P.L. 99-177......	+49	+14,046		
Adjustment for one additional paid day in 1991....................................		+ 1,254		
Adjustment for rental payment to GSA...........		+ 819		
Adjustment for Federal Financial System........		+ 2,860		
Adjustment for postal services.................		- 1,300		
Adjustment for Federal Telecommunications Services...................................		+ 350		
Adjustment for Departmental billings...........		- 34		
Adjustment for Workers Compensation payments...		+ 689		
Adjustment for Federal Employees Retirement System.....................................		+ 2,237		
Adjustment for improved administrative efficiency.................................		- 2,862		
Adjustment for staffing efficiency.............	-49	- 2,559		
Adjustment for calendar year contracting.......		-54,000		
Adjustment for the 1991 costs of the 1991 pay raise......................................		+ 4,811		
Adjustment for the Alaska Resupply program.....	-10			
Transfers:				
Transfer from Student Transportation to the Indian School Equalization Program..........	±151	±12,649		
Transfer from Institutionalized Handicapped to Welfare Assistance Grants..................		± 2,000		
Transfer from Contract Support to Education Administrative Cost Grants..................		±13,000		
Transfer from Tribal Government Services to Self-Determination Services.................	± 7	± 351		
Transfer from New Tribes to Management and Administration (Tribe/Agency)...............		± 175		
Transfer from Social Services (Area Office) to Social Services (Tribe/Agency)...........		± 222		
Within Self-Determination Services, transfer from Small Tribe Core Management Grants to Technical Assistance Grants..............		± 1,750		
Transfer from Central Office to Area Office for Credit and Financing.....................	± 1	± 30		
Transfer from Agriculture (Area Office) to Agriculture (Tribe/Agency)..................		± 366		
Transfer from Forestry (Tribe/Agency) to Menominee Forestry..........................		± 500		

	FTE	Amount	FTE	Amount
Transfer within Wildlife and Parks from tribal management to rights protection.........		± 291		
Transfer within Wildlife and Parks from tribal management to Michigan Settlement.......		± 100		
Transfer within Wildlife and Parks from tribal development to hatchery operations......		± 176		
Within Minerals and Mining, transfer of Linowes Positions to Area Offices...........	±10	± 360		
Transfer from Linowes Positions to Minerals and Mining (Tribe/Agency)....................		± 122		
Within Facilities Management, transfer from Operations and Maintenance to GSA and Direct Rentals.............................		± 108		
Within Facilities Management, transfer from New Facilities to Existing Facilities.......		± 192		
Within Management and Administration, transfer from Payroll/Personnel Services to Intra-Governmental billings.................		± 2,618		
Subtotal, adjustments to base and transfers....			- 10	- 47,435
1991 Base Budget..............................			11,194	987,799
Program Changes (Changes to base budget).......			+ 30	+ 30,386
Total Requirements (1991 Estimate).............			11,224	$1,018,185

Justification of Adjustments to Base

$000 FTE

Adjustment for 1990 Impact of P.L. 99-177........................ +14,046 +49

The Balanced Budget and Emergency Deficit Control Act of 1985 (P.L. 99-177), as amended, required a reduction in non-exempt programs in FY 1990. Since the reduction applies to FY 1990 only, this adjustment is made to allow a more reasonable comparable basis for showing program changes from FY 1990 to FY 1991.

One More Paid Day in FY 1991.................................. + 1,300

The increase in personnel compensation results from there being one more paid day in FY 1991 than in FY 1990.

Rental Payments to GSA.. + 819

The adjustment is for increased costs payable to GSA resulting from higher rates for office and non-office space.

Federal Financial System...................................... + 2,860

The adjustment is for the incremental costs of operating the Department's standard administrative accounting system, the Federal Financial System (FFS).

Payments to the United States Postal Service.................. - 1,300

The adjustment is for the decrease is postal costs due to the installation of postage meters in almost all bureau locations.

Federal Telecommunications System............................. + 350

The adjustment is for higher costs of the Federal Telecommunications System resulting from increased GSA charges.

Departmental Working Capital Fund............................. - 34

The adjustment reflects the decreased costs assigned to the bureau for administrative services provided on a Department-wide basis. In FY 1991, costs for the Washington Interagency Telecommunications System (WITS), the GSA-provided computerized telephone system for the Interior Complex and the Department's in-house data interface/transport system, will decrease. Major acquisition and start-up costs for WITS will occur in FY 1990, with reduced costs in 1991 related primarily to maintenance. This reduction will be partially offset by adjustments for safety management and printing.

Workers Compensation Payments................................. + 689

The adjustment is for increased costs for compensation to injured employees to be paid to the Department of Labor, Federal Employees Compensation Fund, pursuant to 5 U.S.C. 8147(b), as amended by Public Law 94-273.

$000s FTE

FERS Retirement Costs.. + 2,237

The adjustment is for the increase in estimated retirement costs resulting from the continuing growth in the relative proportion of FERS employees in the bureau work force.

Adjustment for Administrative Efficiency.......................... - 2,862

The Department is proposing to decrease spending for consultants, travel, overtime, supplies, and equipment by about 5 percent to improve administrative efficiency and place greater priority on 1991 program initiatives. Specific reductions are proposed in the following areas:

Consultants........	-$ 18,000
Travel..............	- 981,000
Overtime...........	- 316,000
Supplies...........	- 917,000
Equipment..........	- 630,000
Total............	-$2,862,000

Adjustment for Staffing Efficiency.............................. - 2,559 - 49

Savings are proposed from a planned reduction in the average grade achieved by filling vacant positions at an average of one grade lower than previously filled and from taking into account an expected additional lapse of 30 days before filling positions that become vacant in 1991. Specific reductions follow:

Average Grade......	-$1,136,000
Lapse..............	- 1,423,000
Total............	-$2,559,000

Adjustment for Calendar Year Contracting........................ -54,000

Conversion of existing self-determination contracts from a fiscal year to a calendar year basis will occur during 1990 and funds are not required for 1991.

Additional Cost in 1991 of the 1991 Pay Increase................ + 4,811

This adjustment is for 40 percent of the additional amount needed in 1991 to cover the cost of the anticipated 3.5 percent pay raise effective in January 1991. Of this amount, $3,591,000 is for federal pay costs and $1,220,000 is for tribal contractors' pay costs. The remaining 60 percent will be absorbed in FY 1991.

Adjustment for the Alaska Resupply Program...................... - 10

The Alaska Resupply program is funded entirely from user charges. This adjustment transfers the activity from the Operation of Indian Program account to Miscellaneous Permanent Appropriations.

$000s FTE

Internal Transfers

Education.. ±12,649 ±151

Transfer from Student Transportation to the Indian School Equalization Program to effect the provision of law which requires that transportation funding be provided by formula.

Education.. ± 2,000

Transfer from Education (Institutionalized Handicapped) to Welfare Assistance Grants the portion of the funds used to provide social services to institutionalized children. This action reverses the internal transfer made in FY 1990. Upon further review it was determined that Education did not have the staff resources necessary to assume this additional responsibility.

Education.. ±13,000

Transfer from Contract Support to Administrative Cost Grants to effect the provision of law requiring that schools operated under contracts or grants receive indirect costs based on a formula rather than on the basis of indirect cost rates or lump sum agreements.

Tribal Services.. ± 351 ± 7

Transfer from Tribal Government Services to Self Determination Services to restore positions and funding for Central Office operations which were proposed to be consolidated in FY 1990.

Tribal Services.. ± 175

Transfer from New Tribes to Management and Administration (Tribe/Agency) for the operation of the Klamath field office.

Tribal Services.. ± 222

Transfer from Social Services (Area Office) to Social Services (Tribe/Agency) to move funds from the Navajo Area Office to agency locations within the Navajo Area.

Tribal Services.. ± 1,750

Within Self-Determination Services, transfer from Small Tribe Core Management Grants to Technical Assistance Grants to combine these funds with the additional amounts requested to implement provisions of the Indian Self-Determination Amendments of 1988.

Economic Development... ± 30 ± 1

Transfer from Central Office to Area Office for Credit and Financing to establish a credit position at the Muskogee Area Office.

	$000s	FTE
Natural Resources	± 366	

Transfer from Agriculture (Area Office) to Agriculture (Tribe/Agency) to move funds from the Navajo Area Office to agency locations within the Navajo Area.

	$000s	FTE
Natural Resources	± 500	

Transfer from Natural Resources (Tribe/Agency) to Forestry in order to more clearly display the funding provided pursuant to the Menominee Restoration Act.

	$000s	FTE
Natural Resources	± 219	

Transfer within Wildlife and Parks from tribal management to rights protection to continue funding for Boldt case tribes.

	$000s	FTE
Natural Resources	± 100	

Transfer within Wildlife and Parks from tribal management to Michigan Settlement to consolidate funding associated with this Settlement.

	$000s	FTE
Natural Resources	± 176	

Transfer within Wildlife and Parks from tribal development to hatchery operations to more accurately display the purpose of the funds.

	$000s	FTE
Natural Resources	± 360	± 10

Within Minerals and Mining, transfer of Linowes Positions to Area Offices to display the funding where the obligations are incurred.

	$000s	FTE
Natural Resources	± 122	

Transfer from Linowes Positions to Minerals and Mining (Tribe/Agency) to display the funding where the obligations are made.

	$000s	FTE
Facilities Management	± 108	

Within Facilities Management, transfer from Operations and Maintenance to GSA and Direct Rentals to more accurately reflect the purpose for which the funds are spent.

	$000s	FTE
Facilities Management	± 192	

Within Facilities Management, transfer from New Facilities to Existing Facilities for the second and subsequent years of operations.

	$000s	FTE
Management and Administration	± 2,618	

Within Management and Administration, transfer from Payroll/Personnel Services to Intra-Governmental billings to display those costs assessed by the Department or its bureaus in one place.

SUMMARY OF REQUIREMENTS

Activity/ Subactivity	FY 1989 Actual Enacted		FY 1990 Enacted to Date		P.L.99-177 Reduction	FY 1990 Adjusted Approp.	FY 1991 Base		FY 1991 Estimate		Inc(+)/Dec(-) from FY 1990 Enacted Appropriation		Inc(+)/Dec(-) from FY 1990 Adjusted Appropriation	Inc(+)/Dec (-) from FY 1991 base	
	FTE/T	Amount	FTE/T	Amount	Amount	Amount	FTE/T	Amount	FTE/T	Amount	FTE/T	Amount	Amount	FTE/T	Amount
Education:															
School Operations	3,749	186,643	3,818	200,790	-2,723	198,067	3,818	215,910	3,764	231,948	-54	31,158	33,881	-54	16,038
Johnson O'Malley	0	23,000	0	23,572	-320	23,252	0	23,648	0	20,548	0	-3,024	-2,704	0	-3,100
Continuing Education	273	26,314	270	30,880	-419	30,461	270	31,195	270	29,672	0	-1,208	-789	0	-1,523
Tribe/Agency Operations	23	32,546	19	32,142	-436	31,706	19	32,220	19	31,122	0	-1,020	-584	0	-1,098
Subtotal, Education	4,045	268,503	4,107	287,384	-3,898	283,486	4,107	302,973	4,053	313,290	-54	25,906	29,804	-54	10,317
Tribal Services:															
Tribal Government Services	83	8,786	87	7,226	-98	7,128	87	6,791	97	7,847	10	621	719	10	1,056
Social Services	37	93,222	38	92,588	-1,256	91,332	38	94,428	41	93,128	3	540	1,796	3	-1,300
Law Enforcement	46	4,016	51	4,880	-66	4,814	51	4,931	55	5,373	4	493	559	4	442
Self-Determination Services	18	57,644	19	58,626	-796	57,830	19	45,979	7	49,366	-12	-9,260	-8,464	-12	3,387
Employment Development	6	2,685	6	3,059	-41	3,018	6	3,076	6	2,116	0	-943	-902	0	-960
Tribe/Agency Operations	943	124,812	1,015	132,785	-1,802	130,983	1,015	134,832	1,007	144,351	-8	11,566	13,368	-8	9,519
Subtotal, Tribal Services	1,133	291,165	1,216	299,164	-4,059	295,105	1,216	290,037	1,213	302,181	-3	3,017	7,076	-3	12,144
Navajo/Hopi Settlement Program	47	1,985	47	1,002	-14	988	47	1,027	47	1,027	0	25	39	0	0
Economic Development															
Business Enterprise Development	46	10,901	49	10,748	-146	10,602	49	10,773	47	10,866	-2	118	264	-2	93
Road Maintenance	411	30,875	0	0	0	0	0	0	0	0	0	0	0	0	0
Tribe/Agency Operations	59	3,523	59	3,542	-48	3,494	59	3,587	54	3,678	-5	136	184	-5	91
Subtotal, Economic Development	516	45,299	108	14,290	-194	14,096	108	14,360	101	14,544	-7	254	448	-7	184
Natural Resources Development															
Forestry & Agriculture	675	115,817	274	65,871	-893	64,978	274	66,281	274	61,311	0	-4,560	-3,667	0	-4,970
Minerals & Mining	57	15,572	32	5,386	-73	5,313	32	5,314	32	4,557	0	-829	-756	0	-757
Tribe/Agency Operations	893	50,307	893	54,462	-739	53,723	893	55,195	906	53,963	13	-499	240	13	-1,232
Subtotal, Natural Resources Dev.	1,625	181,696	1,199	125,719	-1,705	124,014	1,199	126,790	1,212	119,831	13	-5,888	-4,183	13	-6,959
Trust Responsibilities															
Indian Rights Protection	103	16,041	111	16,743	-228	16,515	111	16,905	112	17,560	1	817	1,045	1	655
Real Estate/Financial Trust Services	366	19,262	373	20,112	-273	19,839	373	20,380	385	26,248	12	6,136	6,409	12	5,868
Tribe/Agency Operations	505	23,495	521	23,930	-324	23,606	521	24,420	559	24,281	38	351	675	38	-139
Subtotal, Trust Responsibilities	974	58,798	1,005	60,785	-825	59,960	1,005	61,705	1,056	68,089	51	7,304	8,129	51	6,384
Facilities Management	1,073	81,453	1,074	85,792	-1,164	84,628	1,074	87,403	1,074	87,161	0	1,369	2,533	0	-242
General Administration															
Management & Administration	774	38,151	774	42,106	-572	41,534	774	44,564	798	48,096	24	5,990	6,562	24	3,532
ADP Services	124	17,650	166	18,203	-247	17,956	166	18,313	173	20,663	7	2,460	2,707	7	2,350
Employee Compensation Payments	0	14,962	0	18,481	-251	18,230	0	11,449	0	11,449	0	-7,032	-6,781	0	0
Program Management	100	6,016	109	6,931	-94	6,837	109	6,955	109	7,755	0	824	918	0	800
Consolidated Training Programs	0	840	0	840	-11	829	0	840	0	1,040	0	200	211	0	200
Tribe/Agency Operations	500	19,843	530	20,837	-283	20,554	530	21,383	551	23,059	21	2,222	2,505	21	1,676
Subtotal, General Administration	1,498	97,462	1,579	107,398	-1,458	105,940	1,579	103,504	1,631	112,062	52	4,664	6,122	52	8,558
Calendar Year Contracting	0	0	0	54,000	-729	53,271	0	0	0	0	0	-54,000	-53,271	0	0
Subtotal, Direct Program	10,911	1,026,361	10,335	1,035,534	-14,046	1,021,488	10,335	987,799	10,387	1,018,185	52	-17,349	-3,303	52	30,386
Reimbursable Program	807	0	869	0	0	0	859	0	837	0	-32	0	0	-22	0
TOTAL, APPROPRIATION	11,718	1,026,361	11,204	1,035,534	-14,046	1,021,488	11,194	987,799	11,224	1,018,185	20	-17,349	-3,303	30	30,386

Activity Summary

(Dollar amounts in thousands)

Activity: Education

Subactivity	FY 1989 Actual Approp.	FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Incr.(+) Decr.(-) From Base
School Operations	186,643	200,790	198,067	215,910	231,948	+16,038
Johnson-O'Malley	23,000	23,572	23,252	23,648	20,548	-3,100
Continuing Education	26,314	30,880	30,461	31,195	29,672	-1,523
Tribe/Agency Operations	32,546	32,142	31,706	32,220	31,122	-1,098
Total	268,503	287,384	283,486	302,973	313,290	+10,317

Justification of Program and Performance

Activity: Education
Subactivity: School Operations

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
A. Indian School Equalization Program (ISEP):						
1. ISEP Formula	$	173,058	170,711	189,733	196,552	+6,819
	(FTE)	(3,460)		(3,619)	(3,585)	(-34)
2. Indian School Program Adjustments	$	1,911	1,885	1,911	4,930	+3,019
B. Institutionalized Handicapped	$	3,428	3,382	1,428	2,228	+800
C. Student Transportation	$	12,661	12,489	—	—	—
	(FTE)	(159)		(—)	(—)	(—)
D. Solo Parent Program	$	133	131	133	133	—
E. Technical Support:						
1. Agency & Area Offices	$	6,762	6,670	6,862	6,862	—
	(FTE)	(175)		(175)	(155)	(-20)
2. Education MIS	$	324	320	324	324	—
	(FTE)	(4)		(4)	(4)	(—)
F. Substance/Alcohol Abuse Counselors	$	2,413	2,380	2,419	1,919	-500
	(FTE)	(20)		(20)	(20)	(—)
G. Tribal Departments of Education	$	100	99	100	—	-100
H. Administrative Cost Grants	$	—	—	13,000	19,000	+6,000
Total Requirements	$	200,790	198,067	215,910	231,948	+16,038
	(FTE)	(3,818)		(3,818)	(3,764)	(-54)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
School Operations	200,790	-2,723	198,067

The value of a Weighted Student Unit (WSU) will be reduced by $34, and the payment for Student Transportation will be decreased by about 2 cents per mile. Each school location will determine from its individual budget how the reduction can be managed. The reduction in WSU value could cause serious problems at the school level since bureau-operated schools are required to begin the phase-in of the higher DOD salary schedule during the 1989/90 school year.

Objective: The long range goal of the bureau's education program is to raise the educational achievement of Indian students in BIA-funded schools to levels that meet or exceed national norms by the year 2000. In working towards this goal, the bureau will continue the initiative begun in FY 1989 to use the Effective School's Model which places strong emphasis on establishing a clear school mission, developing a quality curriculum, training of teachers and other educational staff, and most importantly on educational leadership.

The bureau proposes to begin moving towards this goal with the following objectives:

1. Increasing parental involvement in the education process.
   The bureau proposes to start a pilot early childhood and parent development program for children from birth through the age of five to maximize children's overall development by laying a foundation for later learning and school success. Such programs as "Parents as Teachers" (PAT) and Parent and Child Education (PACE) will be used.

2. Improving teacher performance.
   In FY 1990, the bureau began a three year process to increase teacher salaries to the rates paid by the Department of Defense, as authorized by P.L. 100-297. It is expected that student performance will be enhanced to the extent that BIA-funded schools are able to recruit and retain highly motivated and capable teachers.

   In FY 1991, the BIA also proposes to implement an orientation training program for new teachers, counselors, and selected administrative staff as well as retraining programs for existing staff.

3. Establishing high expectations for student success.
   School staff will receive specialized training in educational methods which educational research has proven to be important in establishing high expectations for students. Instructional methods that are effective with Indian students will be emphasized.

   Other ongoing programs which foster this objective include: the recognition of Exemplary Schools and matching them with schools needing assistance; the Sharing Excellence Network which is a cooperative effort for exchange of information between schools and is sponsored jointly by the Bureau of Indian Affairs, the Department of Education and the Gould Foundation; and the Gifted and Talented Program.

In FY 1991, the Office of Indian Education Programs (OIEP) which is funded under the General Administration component of this budget will also strive to improve its accountability to parents, school boards and tribes. Staff efforts will be strengthened in oversight of the standards compliance program, student testing, and collection of data such as dropout rates and attendance figures. As part of this effort, review teams will conduct a comprehensive assessment of each school once every four years. (Refer to the General Administration component of this budget for more details of this effort.)

The school operations program (1) provides basic educational and residential programs to Indian students not served by public or sectarian schools; (2) provides residential care for Indian students attending public schools; (3) meets the needs of Indian students and addresses those problems intensified among Indian children because of their situation, such as bilingual needs, counseling, and guidance; (4) provides operational funding to elementary and secondary schools under contract or grant to tribes; and (5) enhances local control of school operations.

The bureau also administers programs funded by the Department of Education such as (figures are for FY 1990):

° Handicapped Programs

Education of the Handicapped, P.L. 94-142 ($17,675,765): These funds provide supplemental services to handicapped children from birth to 20 who require special education and related services.

Infants and Toddlers ($819,000): P.L. 99-457 authorized funding to bureau schools for children ranging from birth to 2 years of age. Funds for the first two years will be used for inter-agency agreements to plan a service delivery system.

Training ($103,000): The bureau received a competitive grant from the Department of Education to train 70 para-professionals. Forty will be trained in speech therapy and thirty in physical therapy and will serve as providers.

° Math and Science ($686,700): These funds support summer institutes where teachers are trained in the new techniques of teaching math and science concepts.

° Chapter I, Education Consolidation & Improvement Act ($25,217,025): These funds provide supplemental financial assistance to schools for remedial programs designed to raise the academic level of targeted Indian children in the areas of math, reading and language.

° Drug Free Schools & Communities Act ($3,475,000): These funds provide the schools with curriculum, materials, and organized activities for students who exhibit alcohol and substance abuse problems.

° Title V ($2,576,368): The Indian Education Act, P.L. 100-297, authorized grants to bureau-operated schools for a variety of educational activities. These grants were formerly referred to as Title IV and only contract-operated schools were eligible. Schools apply directly to the Department of Education.

° Title VII - Bilingual Education Program ($1,137,000): Bureau-funded schools may apply directly to the Department of Education for funds to support instructional curriculum relating to the study of history and culture associated with the native language.

A. Indian School Equalization Program

Base Program ($189,733,000; FTE 3,619): According to data provided by the U.S. Department of Education, approximately 82% of Indian students are served by state-operated public schools and 7% are served by private and parochial schools. The remaining 11% of all Indian children in school are provided an education in schools funded by the Bureau of Indian Affairs and operated by the bureau or by tribes under contract or grant. Approximately 51% of the average daily membership (ADM) in bureau-funded schools in FY 1990 is in residential schools either because the students live farther than a 1-1/2 mile walk from public or federal day schools' bus routes or because of special social or academic factors such as poverty, family difficulties, or problems encountered in other school systems.

In an effort to meet the basic and special educational needs of Indian students, bureau and contract schools incorporate the following activities into their educational programs:

KINDERGARTEN AND ELEMENTARY EDUCATION (K-8) - Basic educational programs for children utilizing specialized staff in small groups, including school health, nutrition, counseling, and the relevance of education to the child's culture.

SECONDARY EDUCATION (9-12) - **Basic educational curricula at grades 9-12, extra-curricular activities and special curricula including vocational courses.**

BILINGUAL EDUCATION - Special programs to help children of limited English proficiency to improve their ability to read, write, speak, and understand English.

EXCEPTIONAL CHILD PROGRAMS - Individualized Education Plans (IEPs) outline the special education and related services requirements to meet the needs of individual handicapped students. In most cases, the services include, but are not limited to, physical therapy, psychological counseling, and specific instructional activities. This includes classroom instruction, instruction in physical education, home tutoring, instruction in hospitals and institutions, and related service programs.

GIFTED AND TALENTED - This program provides additional services or activities for those children who are identified as having high performance capability in areas such as intellectual, creative, artistic or leadership capacity, or in specific academic fields.

RESIDENTIAL PROGRAMS - These programs provide for the housing and care of students, including room and board, recreation, libraries, tutoring and other programs required in residential situations. Supplementary services are provided to handicapped children in residential care programs as identified in ISEPs. Students who are in the residential setting as a result of social placements may be identified as needing special counseling and be placed in the Intensive Residential Guidance Program.

SUMMER PROGRAMS - At the option of school boards, available funds may be expended to support summer programs, particularly for remedial instruction.

In FY 1990, the bureau will fund 166 elementary and secondary schools and 14 dormitories to carry out its educational responsibilities. These federally-operated and contracted schools served 39,791 students in 23 states in FY 1990.

This figure includes 38,105 students in the basic instructional programs and 1,686 students in the dormitory program for students who attend public schools. The types of educational facilities include:

Day Schools which provide basic elementary and secondary education programs to children who reside at home;

On-Reservation Boarding Schools which are located within the boundaries of an Indian reservation and provide residential care in addition to the education program;

Off-Reservation Boarding Schools (ORBS) which are located outside the boundaries of an Indian reservation and provide residential care in addition to the education program;

Dormitories which provide residential care for students attending public schools; and

Contract or Grant Schools (day and boarding) which are funded by the bureau and operated by the tribes under contract with the Bureau of Indian Affairs pursuant to P.L. 93-638 or under the grant school provisions of P.L. 100-297.

The major portion of bureau school operating funds for instruction, boarding, and dormitory costs is distributed directly to bureau-operated and contract schools by a formula using a weighted student funding approach called the Indian School Equalization Program (ISEP) Formula. Monies used to fund other educational support and administrative school services are provided apart from the formula.

SUMMARY OF FISCAL YEAR 1990 ISEP FORMULA FUNDING

TYPE OF SCHOOL	Total ADM	Instructional WSU	Residential WSU	Gifted and Talented WSU	Total Formula Funds
Day Schools					$68,497,800
Bureau Operated (49)	10,079	13,466	—	444	
Contracted (60)	9,523	13,137	—	547	
On-Reservation Boarding Schools					82,042,200
Bureau Operated (39)	12,830	16,562	8,395	309	
Contracted (11)	3,563	4,970	2,555	193	
Off-Reservation Boarding Schools					15,109,800
Bureau Operated (6)	1,913	2,645	2,837	85	
Contracted (1)	197	272	235	—	
Dormitories					5,838,900
Bureau Operated (8)	873	—	1,143	--	
Contracted (6)	813	—	1,201	--	
Grand Total (180)	39,791	51,052	16,366	1,578	$171,488,700
Total includes WSUs calculated for small school adjustment		(472)	(250)		

In FY 1991, Student Transportation was merged into the ISEP formula to provide maximum flexibility at the local level when the Bureau converts to the new Federal Financial System (FFS). Currently, schools have flexibility to use transportation dollars for educational purposes or vice versa depending on their local needs. Since the new financial system contains edits which would constrain this spending flexibility, the decision was made to distribute the funds together. However, the calculation of transportation funding will be accomplished in the same manner as in the past.

Student transportation funding includes personal services costs for vehicle operators, GSA vehicle rental, vehicle supplies and equipment, vehicle maintenance and repair, and other transportation support costs. Because adverse road conditions increase transportation costs, miles driven on unimproved roads, particularly on the Navajo Reservation, are weighted by a factor of 1.2 before multiplying by the established rate.

Funds are allocated to day schools that provide transportation between the students' residences (or other traditional pickup points on the reservation) and the school site based on the average number of bus miles on one day x 180 days of school x the established rate per mile. Transportation funds are allocated to boarding schools to provide for boarding students' arrival at school in the fall, a round-trip home mid-year, and their return home at the end of school. If chartered bus, airlines, or other commercial transportation modes are used to transport students, the bureau reimburses the actual cost of four trips.

Calculating the Base Student Value - Under the Indian School Equalization Program Formula, different educational activities conducted by bureau-operated and contract schools, such as elementary and secondary education, bilingual education, residential programs, gifted and talented programs, and programs for different types of handicapped students, are assigned weights (using a base amount of 1.00) which reflect the relative costs associated with the various activities. P. L. 100-297 added an additional weight of .2 for students in grades 7 and 8 and also increased the weight to 2.0 for gifted and talented students. The relative weight factors were determined on the basis of the best practice and experience of state school systems which have developed equalization funding formulae. The number of students a school has participating in the various educational activities is identified, totalled by activity, and multiplied by the weight factor for each activity to arrive at the number of weighted student units (WSU) at each school. The dollar value of a WSU is determined by the division of the total number of all schools' WSUs into the total available funding. The WSU dollar value is multiplied by the number of each school's WSUs to arrive at each school's amount of funding.

The total WSU figure includes all of the WSUs generated directly by instructional and residential programs, the Small School Adjustment, plus the Gifted and Talented program. The Small School Adjustment is provided for schools with less than 50 students, since it costs more per capita to operate very small schools and dormitories. An explanation of the FY 1990 formula distribution is presented on the next page.

P.L. 100-297, the Education Amendments of 1988, provides for 1% of the ISEP appropriation to be used as a contingency fund by the Office of Indian Education Programs to meet unanticipated requirements at bureau-funded schools, and for .133% to be used for national school board training. These amounts are deducted before the WSU value is calculated.

Summary of Weighted Student Units by Program

	Actual FY 1990		
	ADM	WSUs	
I. Instructional Programs			
A. Basic	38,105 a/	43,901	
B. Exceptional Child	6,308	4,049	
C. Bilingual	12,907	2,581	
D. Gifted and Talented	1,907	1,578	
Total Instructional WSUs..............................			52,109
II. Residential Programs			
A. Boarding Schools			
1. Basic	9,925	12,683	
2. Exceptional Child Residential	282	137	
3. Intensive Residential Guidance	2,220	1,110	
B. Dormitories			
1. Basic	1,686 a/	1,992	
2. Intensive Residential Guidance	351	176	
3. Exceptional Child Residential	13	7	
Total Residential WSUs..............................			16,105
Total Formula Program WSUs..			68,214
Small School Adjustment..			722
School Board Supplement for small schools..........................			60
GRAND TOTAL......................................			68,996

a/ The "Basic" student ADM numbers for Instructional and Dormitories are added together to obtain the total unduplicated, unweighted ADM (39,791 for FY 1990).

The following table provides a funding history of the Indian School Equalization Program (ISEP) Formula from FY 1982 through FY 1991.

	Number of Schools	ADM	WSU	$ per WSU
FY 1982	227	42,930	76,204	$ 1,965
FY 1983	210	42,535	75,644	$ 2,014
FY 1984	206	42,825	75,407	$ 2,027
FY 1985	193	41,991	74,356	$ 2,066
FY 1986	180	40,280	69,899	$ 2,103
FY 1987	181	39,911	68,055	$ 2,230
FY 1988	182	39,592	67,266	$ 2,399
FY 1989	182	39,381	66,607	$ 2,408
FY 1990	180	39,791	68,996	
Gifted & Talented Program			1,578	$ 2,250 (post sequester)
Other Programs			67,418	$ 2,491 (post sequester)
FY 1991 (Est)	179	39,400	68,320	$ 2,670 (transportation funding will be additional)

Indian School Program Adjustments

Base Program ($1,911,000; FTE 0): Program adjustments include special programs, new activities, and other costs not considered in the ISEP formula. Any savings throughout the year in these items will be added to the amount available for ISEP and distributed to the schools by formula. Base funding for FY 1990 includes the following:

Start-up Costs for New or Expanded Programs..............................50,000
Western Cheyenne River Consolidated School opened for school year 1990 and received funding for start up costs.

Declining Enrollment Adjustment...400,000
Schools which experience greater than a 10% decline in enrollment from one year to the next are allowed to average the enrollment of the two years for funding purposes. This transition year funding allows the school to adjust staffing and other costs to reflect the lower enrollment. Although there was an increase in total enrollment, 82 schools experienced a decline for enrollment in FY 1990.

Law Enforcement - Chemawa..80,000
Law enforcement activities at Chemawa are complex, because the school is located on federal land over which local, county and state officials have no jurisdiction. Although GSA normally provides protection for federal properties, it has no legal responsibility to provide security for bureau schools and has declined to provide the required protective services. There is no adjustment factor within ISEP for such a situation. Chemawa, in addition to its normal security staff, employs one criminal investigator and two law enforcement officers at an annual cost of $80,000.

Law Enforcement - Riverside..25,000
Law enforcement services at Riverside Indian School are needed particularly in the evening. Bureau law enforcement authority extends only to tribal lands, and Anadarko authorities have no jurisdiction over the school since it is outside the city limits. The county does not maintain the manpower to provide timely and adequate services to the school. In an agreement with the Area Director at Anadarko, Riverside has two positions, one of which is funded from education funds in the amount of $25,000.

Recognition of Exemplary Schools..450,000
In FY 1990, ten schools were recognized as having exemplary programs using the criteria developed during FY 1988. Each of the ten schools "adopted" a school which had need of technical assistance in areas such as curriculum development and appropriate teaching techniques.

The selected schools were geographically dispersed so that they provided technical assistance to a variety of programs. Staff at the exemplary schools helped their colleagues in surrounding bureau schools by conducting on-site in-service training, sharing materials, demonstrating new methodologies, or "loaning" their principal to a school needing instructional leadership. In FY 1990, increased emphasis was placed on raising student achievement.

In FY 1989, the bureau established a Sharing Excellence Network which is a combined effort by the Bureau of Indian Affairs, the Department of Education's National Diffusion Network (NDN) and the Gould Foundation. This effort will continue in FY 1990 with twenty-six schools being members of the network. The purpose of the network is to establish a pilot educator's network which will create opportunities to share and exchange information about programs, policies and strategies that work in bureau-funded schools; to establish a formal process to identify and promote adoption of these programs, practices, and strategies; to use the network as a vehicle for discussing concerns and needs affecting the schools; and to continue to strengthen and increase involvement of bureau-funded schools with NDN and other national exemplary programs. Forty-eight competitive mini-grant awards have been distributed to the network schools in order to fund programs for staff development, student participation, parent/ community training programs, and development of school based professional libraries.

Furniture Repair Program..150,000

In FY 1990, the furniture repair program will concentrate on schools in North and South Dakota. The funding also covers the cost of shipping the furniture. The furniture repair program generally takes place during the summer months when school is not in session. Since this program began, 50 schools with over 13,000 students have received refurbished chairs, couches, chests of drawers, cabinets, beds, bookcases, desks and mattresses. The funds support two agencies each year on a cyclical basis. Generally, the Federal Prison Industries has provided the services to repair furniture.

Staff Development and Training......................................500,000

In FY 1988, the bureau adopted the Effective Schools Movement which has had significant success in public schools. At the beginning of FY 1989, nineteen schools were selected to participate in the pilot phase of the program. Thirty principals and line officers received commitment training; fifty-seven principals, faculty members, and school board representatives attended the leadership training phase of the program. The nineteen schools also developed the School Improvement Plans (SIPs) which are blueprints used to address each school's specific needs. During FY 1989, the bureau also provided training to fifty-three additional schools which indicated an interest in school improvement efforts. By late FY 1989, twelve additional schools had been selected and provided with readiness training so they they would be in the cycle for participation in the 1990 program. In FY 1990, the original schools received funding to enter the implementation phase of the effective schools process. The additional twelve schools began the commitment training which called for the establishment of the School Effectiveness Team (SET) training phase of the process, and completed their needs assessments. In FY 1991, the originally selected Effective Schools will undergo an intensive evaluation of the Effective Schools model by looking at student achievement scores, behavioral and attitudinal changes of students, morale of school staff, and increased level of parental and community involvement in the school operation.

Writer's Workbench..256,000

The Writer's Workbench (WWB) program was developed in 1978 as a joint venture between AT&T and Bell Laboratories to improve communication packages for voice synthesis products. Basically, the computer program aids the student in concentrating on those writing tasks and responsibilities that are not mechanical. Students using the computer program have more time to devote to writing tasks such as research, revision, proofreading, and establishing a style and purpose since the program can readily detect spelling errors, check the grammar, and correct punctuation and vocabulary. Six school sites and approximately 2,850 students will participate in this one-time demonstration program in FY 1990.

Total, Indian School Program Adjustments........$1,911,000

Change from FY 1991 Base: (Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	+/- Difference
Indian School Equalization	$	189,733	196,552	+6,819
Program (ISEP) Formula	(FTE)	(3,619)	(3,585)	(-34)
Indian School Program Adjustments:		1,911	4,930	+3,019
Start-Up Costs		50	--	-50
Declining Enrollment		400	600	+200
Law Enforcement-Chemawa		80	80	--
Law Enforcement-Riverside		25	25	--
Recognition of Exemplary Schools		450	450	--
Furniture Repair Program		150	150	--
Staff Development and Training		500	1,000	+500
Writer's Workbench Demonstration Project		256	--	-256
Junior/Senior High Equipment Program		--	625	+625
Parental and Community Involvement		--	2,000	+2,000

Indian School Equalization Program (ISEP) Formula (+$6,819,000; FTE -34): This net increase is composed of the following adjustments:

+$8,800,000 for the second year of the phase-in of the DOD teacher pay scale as required by P.L. 100-297.

-$800,000 since FY 1990 Congressional add-on for transportation was not continued when transportation was melded into the ISEP formula; and

-$1,181,000 based on the historical declining trend in the total enrollment in bureau-funded schools. In FY 1990, the total enrollment increased slightly for the first time in ten years, yet 82 schools still experienced a decline in their enrollment.

Indian School Program Adjustments (+$3,019,000); FTE 0):

Start-up Costs (-$50,000): Since no new schools will be started in FY 1991, no funds are requested.

Declining Enrollment (+$200,000): The increase is based on historical experience that declining enrollment exceeds the funds budgeted. In FY 1990, nineteen schools were funded for declining enrollment at a cost of $641,000 despite a slight increase in total enrollment.

Staff Development and Training (+$500,000): In FY 1991, the bureau plans to implement a two week training institute for all new principals, Agency Superintendents for Education, Area Education Programs Administrators, and their assistants to teach the methods and procedures of operating an effective school. Supplemental training courses will be offered during the school year. Specifically, the training will include familiarizing the new staff with the bureau financial system, leadership skills, the effective schools process, the cultural and educational differences of the respective tribes, and the methods and technologies used in bureau schools. An orientation program will also be conducted during the summer for newly hired teachers and guidance counselors. The bureau experiences a turnover rate in teachers and related staff of about 30% or 500 individuals each year. Such topics as creating an effective school climate, techniques and methodologies for teaching Indian children, cultural differences, methods for fostering parental involvement, techniques in operating a boarding facility and home-living processes will be covered during that time. The bureau will also invest funds in re-training current teachers and counselors for a two week summer session. This training will emphasize whole language skills and math skills using learning styles which have proven effective with Indian children. More specifically, the teachers and counselors will be trained to recognize the students' need for concrete examples, relevant material, oral language practice, and visual materials; to promote natural creativity; and to use whole language skills and real life math skills in the classroom. In bureau schools where whole language skills are being taught, students have demonstrated a marked improvement in achievement test scores.

The bureau plans to use both contractors and its own personnel as trainers and consultants for this purpose. All training programs will require payment of salaries and related expenses such as per diem and travel of staff during the training period.

Writer's Workbench Demonstration Project (-$256,000): The FY 1990 Congressional add-on for the Writer's Workbench pilot project is not continued in FY 1991.

Junior/Senior High School Equipment Program (+$625,000): In FY 1991, bureau-funded junior high schools which have departmentalized and developed a differentiated curriculum of the major disciplines can apply for equipment purchase for practical arts, home economics, science and computer literacy. Schools must demonstrate that there is need for such equipment and explain in their application why they cannot provide the items using the ISEP funds. Senior high schools may also apply for funding on a matching basis, much like the textbook funding in FY 1989. Priority will be given to practical arts and home economics which are requirements for graduation. The third priority will be computers for computer laboratories.

Parental and Community Involvement (+$2,000,000): In FY 1991, the bureau will implement pilot programs to encourage parental and community involvement in the education program and to increase student achievement. The effort will use such programs as "Parents as Teachers" (PAT) and Parent and Child Education (PACE).

The "Parents as Teachers" (PAT) program will emphasize early childhood education from birth to 5 years old. Funds will be used to provide parent educators, ancillary personnel, instructors, support staff, training, curriculum materials, equipment and other support services. Schools will apply for participation in this program and selection will be made on the following basis:

--school must perform a needs assessment;

—there must a comprehensive implementation plan including budget, description of community involvement, consistent selection criteria, hiring policies and practices;

—there must be available facilities;

—coordination with existing available services must be part of the project;

—an extensive evaluation plan must be described including identification of instruments or measures to be used in determining the success of the project.

Through encouragement and training, the Parents as Teachers program will enable parents to help teach their children during different stages of the child's development. A parent educator will visit the home of the identified participants on a monthly basis and teach the parents various skills in observation, reading-readiness, story telling, and critical thinking. Other skills which will be taught include practical life, communication and motor development. The parent educator will teach techniques to help the child progress and also give the parent the self-confidence to know they are doing a good job in parenting. Group meetings will be held with the parents and members of the community. The bureau anticipates using other available resources in the implementation of this program such as Indian Health Services, bureau social services personnel, Headstart programs, Child Protection Teams, and project staff.

PACE (Parent and Child Education) is a program for 3 to 4 year olds. In this program, parents attend classes with their children. They receive training in adult education, the GED, and parenting skills while the children attend preschool activities. The bureau will coordinate this program with the Adult Education Program at the tribal level.

B. Institutionalized Handicapped Program

Base Program ($1,[illegible]28,000; FTE 0): The Office of Indian Education Programs (OIEP) is mandated by the Education for All Handicapped Children Act, P.L. 94-142, to provide financial support for the educational costs of handicapped Indian children who are placed in institutions. The institutionalized handicapped program serves the special education and related service needs of handicapped Indian children in state-operated institutions, approved private non-profit facilities, and facilities operated by Navajo tribal organizations. The program typically provides education and related services to severely handicapped children between the ages of 3-21 years. Some of the direct services include: instruction by special education teachers and aides; services by physical and occupational therapists; adapted physical education; medical related services; psychological services; special vocational services and speech therapy. Some of the indirect services affecting costs include: assessment of handicapping conditions and service needs; admissions and appropriate placement; individual education program development; inservice training for professionals and aides; supplies and materials; transportation; food services; facility operation; and program administration. The total costs for special education and related services vary greatly and depend upon a number of factors: (a) high cost educational/custodial placements; (b) different handicapping conditions; (c) length of placement; (d) fixed cost rates vs. variable cost rates; (e) placements requiring extensive medical, social, and educational/training intervention; and (f) when appropriate, living care costs associated with the severity of the handicapping condition. Costs for handicapped Indian children placed in state-approved facilities are set by state Departments of Mental Retardation or their equivalents. The costs are based on a fixed daily rate which may be adjusted by contract auditing for actual cost determination. On average, approximately 200 children are served in about 25 facilities. In no instance are placements made without the approval of bureau special education staff at agency offices. All possible alternative placements are examined to determine the least restrictive appropriate environment. Referral, identification, evaluation, and placement services are in compliance with P.L. 94-142, the Indian School Equalization Program, and appropriate sections of the U.S. Department of Education's General Administration Regulations (EDGAR).

Change from FY 1991 Base: (Dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	+/- Difference
Institutionalized Handicapped Program	1,428	2,228	+800

Institutionalized Handicapped Program (+$800,000): The increase will fund a growing population of institutionalized handicapped students in areas other than the Navajo reservation. The population is increasing because of the rise in children born to mothers who are chronic abusers of drugs or alcohol. They are now of school age and must in some cases be institutionalized. P.L. 99-457 also opened up the potential care of 0-5 year old children, and over 12,000 children on 63 reservations have been identified for services. The bureau anticipates that some of these children will need institutional care. Costs for institutionalized care have risen and the bureau has continued to provide minimal care, largely on the Navajo Reservation, since they have the largest population of handicapped students, by holding the contractors at the same daily rate for the past three years. The ages of the institutionalized children are increasing and the bureau is having to depend on private institutions to provide educational opportunities for the children.

C. Student Transportation

Student transportation funds were transferred to the ISEP formula.

D. Solo Parent Program

Base Program ($133,000; FTE 0): The Solo Parent Program, operated at Sherman Indian School and Flandreau Indian School, provides single parents the opportunity to complete their high school education while living at the school with their children. The parents are provided instruction in home management, child development and child care, in addition to the regular school curriculum. Day care is provided for the children, and medical services are provided by the Indian Health Service. The schools also receive ISEP funding for these students to cover their basic instructional and boarding costs.

E. Technical Support - Area and Agency Offices

Base Program ($7,186,000; FTE 179): Technical support includes educational Management Information Systems (MIS) activities; field level staff assistance to the Director, Office of Indian Education Programs (OIEP); and broad technical assistance and leadership for all education programs to local school boards, other tribal members, parents and other Indian citizens.

Area and Agency Offices ($6,862,000; FTE 175): A field education office typically provides technical support and program supervision for all of the following education programs: (1) post-secondary education programs; (2) peripheral dormitories; (3) off-reservation boarding schools; (4) tribal contract and grant schools; (5) federal title programs; (6) elementary and secondary programs; (7) higher education and adult education programs; (8) exceptional education programs; (9) student support services; and (10) bilingual programs. Program management and direction responsibilities of field operations include providing line direction to and supervision over the operation of all bureau education programs within their jurisdiction; implementing policies and procedures applicable to the jurisdiction; directing, supervising and facilitating program execution; monitoring and evaluating program services and systems for compliance to the standards; formulating budgets and financial programs; providing technical assistance and advice to subordinate programs and organizations; and taking responsibility with local school boards and tribal contractors for school operations.

Management Information Systems ($324,000; FTE 4): During FY 1989, the Office of Indian Education Programs in its on-going evaluation of system needs, developed a priority list which was coordinated with the bureau's Office of Data Systems. As a result, the major initiatives of the Management Information Systems (MIS) Program in FY 1990 are continued in FY 1991 and include: (1) developing education's personnel system; (2) developing the curriculum information system; (3) developing the continuing education system; (4) implementing a nation-wide electronic mail and file transfer system; and (5) further enhancement to the student enrollment and attendance system (SEAS).

In FY 1991, the OIEP will continue to provide ADP services for all education locations and for other bureau offices. These ADP services include the printing of financial, payroll, FTE, personnel, facilities, and other special reports generated through the bureau's ADP system.

The following is the estimated breakdown of the MIS FY 1991 budget:

	FY 1989	FY 1990	FY 1991
System Development................	$ 70,000	$ 10,000	$ 10,000
ADP Services......................	97,000	97,000	97,000
MIS salaries, materials and supplies, data communication line, travel, equipment maintenance and repair..........	217,000	217,000	217,000
Total	$384,000	$324,000	$324,000

Change from FY 1991 Base: (Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	+/- Difference
Area and Agency Offices	$	6,862	6,862	—
	(FTE)	(175)	(155)	(-20)

Area and Agency Offices ($0; FTE -20): In FY 1989, the Bureau began assessing and evaluating the technical support staffing at agencies and areas and established standards with respect to ratios of employees to the number of schools supervised, tribes served, and programs monitored. In FY 1990, the bureau began to implement management initiatives to streamline delivery systems and increase efficiency of program operations. The funding decrease in FY 1990 as a result of these efficiency initiatives will result in decreased staffing levels in FY 1991. To a large extent, the decrease in FTE will be accomplished through attrition.

F. Substance/Alcohol Abuse Education Programs

Objective: The objective of education programs in substance and alcohol abuse is to provide bureau-funded schools with curriculum materials and technical assistance in developing and implementing alcohol and substance abuse programs in the areas of prevention, assessment, identification, and crisis intervention through the use of referrals and additional counselors at the schools.

Base Program ($2,419,000; FTE 20): Section 1121 of P.L. 99-570, the Indian Alcohol and Substance Abuse Prevention and Treatment Act of 1986, requires all schools funded by the Bureau of Indian Affairs to include within the curriculum a program of instruction relating to alcohol and substance abuse prevention and treatment. These funds are used to hire certified counseling personnel to provide counseling, treatment, prevention, intervention and follow up for students in grades K-12. In FY 1989, the bureau expanded this program with other substance abuse programs from the Department of Education to include a program in Health Promotion and Disease Prevention (HPDP) and a program in AIDS. Training, technical assistance and dissemination of information were provided to schools.

Change from FY 1991 Base: (Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	+/- Difference
Substance/Alcohol Abuse	$	2,419	1,919	-500
Counselors	(FTE)	(20)	(20)	(--)

Substance/Alcohol Abuse Counselors (-$500,000; FTE 0): The bureau continues to experience difficulty in hiring certified credentialed counselors for substance abuse programs. As an alternative approach to the substance abuse problem, the bureau has trained and will continue to use existing counselors, teachers, home living specialists, and dormitory managers to provide counseling and instruction. These positions are already funded under the ISEP formula.

G. Tribal Departments of Education

Objective: P.L. 100-297 authorizes the bureau to provide grants and technical assistance to tribes for the development and operation of tribal departments of education.

Base Program ($100,000; FTE 0): P.L. 100-297 authorized tribes to establish Tribal Departments of Education. The Congress funded this pilot at the request of the Choctaw Tribe. The tribe will coordinate and control all matters relating to the education of Indian children and provide for the development of educational programs including all preschool, elementary, secondary, and higher or vocational educational programs funded by the tribe.

Change from FY 1991 Base: (Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	+/- Difference
Tribal Departments of Education	$	100	—	-100

Tribal Departments of Education (-$100,000; FTE 0): The FY 1990 Congressional add-on for the Choctaw Tribal Education Department pilot project is not continued in FY 1991. The bureau supports the concept of tribal departments of education as a means of providing coordination of education programs at the local level. Most tribes already have some education organization in place, though they range widely in activity, involvement, responsibility and size. P.L. 100-297 attempted to formalize these entities and perhaps expand their role. A tribe wishing to establish a Department of Education may do so as part of its tribal administrative organization which is supported from indirect cost funding.

H. Administrative Cost Grants

Objective: P.L. 100-297 directs that each tribe or tribal organization operating a school shall receive an Administrative Cost Grant in lieu of contract support funds based on negotiated indirect cost rates or lump sum agreements. The amount of the grant is determined by the following Administrative Cost Formula which is authorized in the law:

$$\frac{\left(\begin{array}{l}\text{Tribe direct}\\ \text{cost base}\end{array}\right) \times \left(\begin{array}{l}\text{minimum}\\ \text{base rate}\end{array}\right) + \left(\begin{array}{l}\text{standard}\\ \text{direct cost}\\ \text{base}\end{array}\right) \times \left(\begin{array}{l}\text{maximum}\\ \text{base rate}\end{array}\right)}{\text{Tribe's direct cost base} + \text{standard direct cost base}}$$

Base Program ($13,000,000; FTE 0): In FY 1990, 78 schools will be operated either by contract or grant and will be eligible to receive a grant under the Administrative Cost Formula. P.L. 100-297 provides for this formula to be phased in over a three-year period to avoid the impact of major increases or decreases on an individual school. This base funding level results from a base transfer from Self-Determination Services which previously paid indirect costs for all contracted programs.

In FY 1990, the bureau will be contracting with a nationally reputable management and accounting firm to study the relevant factors that affect administrative costs for contract and grant schools and to determine the amounts necessary to assure that adequate but not excessive administrative grants are provided. This study is mandated by P.L. 100-297.

Change from FY 1991 Base:

(Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	+/- Difference
Administrative Cost Grants	$	13,000	19,000	+6,000

Administrative Cost Grants (+$6,000,000; FTE 0): The requested funding of $19 million for the formula was calculated using the FY 1988 direct program costs as a base.

Object Class Distribution - School Operations Subactivity

	FTE	Amount
Personnel Compensation (FTE)........................	-54	+6,968,000
Personnel Benefits........................		+975,000
Travel........................		-800,000
Other Services........................		+2,000,000
Supplies and materials........................		-730,000
Grants........................		+7,000,000
Equipment........................		+625,000
Total........................	-54	+$16,038,000

Justification of Program and Performance

Activity: Education
Subactivity: Johnson-O'Malley Educational Assistance

(Dollar amounts in thousands)

Program Elements	FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Johnson-O'Malley Educational Assistance $	23,572	23,252	23,648	20,548	-3,100
Total Requirements $	23,572	23,252	23,648	20,548	-3,100

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Johnson-O'Malley Educational Assistance	23,572	-320	23,252

The Johnson-O'Malley funds are distributed by formula based on a student count, and the reduction results in a decrease of $1.12 per student. Each contracted program will determine locally how to absorb the reduction.

Johnson-O'Malley Educational Assistance Program

Objective: The Johnson-O'Malley Educational Assistance program provides funding for supplemental educational programs for eligible Indian students in public schools and programs for three and four-year-old children to meet their special needs as determined by contractors and local Indian education committees.

Base Program ($23,648,000): Indian children attending public schools sometimes have special educational needs resulting from disadvantaged economic and social backgrounds, or from different cultural backgrounds. The Federal Government under the authority of the Johnson-O'Malley Act of 1934, as amended, provides financial assistance through the bureau to contractors for eligible students attending public schools to supplement the regular school programs and address these problems. The types of supplemental activities provided by the JOM program relate to educational needs, teacher support, and parental costs. The most popular programs are home-school coordinators and academic remediation. The home-school coordinators are effective in working with students and parents on an individual basis to encourage and motivate students to remain in school and to further develop their potential by attending post-secondary schools. Academic remediation is usually carried out during the school year, in or out of the school setting, by certified teachers, teacher aides and occasionally by peer students from junior high or high school.

In FY 1990, the JOM program funded 217,414 students in 32 states and operated under 325 contracts.

Type of Contractor	1989	1990
Tribes	163	173
Tribal Organizations	54	53
Public School Districts	83	93
State Departments of Education	6	6
Total Contracts	306	325

In FY 1988, the bureau reviewed various methods of equitable fund distribution and recommended a new formula which was approved by Congress in P.L. 100-446, the FY 1989 Interior and Related Agencies Appropriation Act. The three-year phase-in of the new minimum weight factor began in FY 1989 with all states receiving a minimum weight of 1.1. In FY 1990, the minimum will be 1.2; and in FY 1991 it will be 1.3. The following chart shows the estimated distribution by state during the phase-in period. The FY 1991 distributions are calculated on the basis of FY 1990 enrollment figures.

HISTORICAL JOM DISTRIBUTION BY STATE

STATE	FY 1988 ACTUAL	FY 1989 ACTUAL	FY 1990 ACTUAL	FY 1991 ESTIMATE
ALABAMA	$	$ 43,700	$ 43,500	$ 39,100
ALASKA	4,626,100	4,940,700	4,503,900 *	3,735,100 *
ARIZONA	3,622,900	4,313,900	4,110,700	3,693,300
CALIFORNIA	324,700	399,400	423,100	380,100
COLORADO	68,800	68,500	84,100	75,600
CONNECTICUT		3,900	3,700 *	3,100
FLORIDA	39,100	51,800	47,300	42,500
IDAHO	156,500	183,500	187,500	168,500
IOWA	46,400	53,400	56,900	51,100
KANSAS	65,300	53,100	61,300	55,100
LOUISIANA	8,800	11,300	11,400	10,200
MAINE	21,500	20,400	22,400	20,200
MICHIGAN	261,000	301,400	343,100	308,300
MINNESOTA	469,300	634,700	773,300	694,800
MISSISSIPPI	35,300	48,000	45,600	41,000
MISSOURI		1,200	900	800
MONTANA	807,100	856,900	900,600	809,200
NEBRASKA	152,100	172,400	205,600	184,700
NEVADA	300,800	331,200	320,100	287,600
NEW MEXICO	2,623,900	2,929,700	3,171,500	2,849,400
NEW YORK	282,200	302,400	279,400 *	231,700 *
NORTH CAROLINA			28,700	25,700
NORTH DAKOTA	264,800	313,500	311,800	280,100
OKLAHOMA	3,578,200	4,098,900	4,348,500	3,907,000
OREGON	229,400	246,900	240,300	215,900
RHODE ISLAND	40,600	58,800	39,400	34,300
SOUTH DAKOTA	852,400	958,000	1,069,000	960,500
TEXAS	21,500	26,300	38,100	34,300
UTAH	269,800	294,000	292,200	262,600
WASHINGTON	561,900	618,400	643,600	578,300
WISCONSIN	471,800	508,500	498,500	447,900
WYOMING	148,800	155,200	144,700 *	120,000 *
TOTALS	$20,351,000	$23,000,000	$23,250,700	$20,548,000

* These states have a weight factor in excess of the 1.2 minimum in FY 1990 and the 1.3 minimum for FY 1991.

FY 1990 JOM DISTRIBUTION BY STATE

	(1) a/	(2) b/	(3)	(4) *	(5) b/	(6)
STATE	STATE AVG. PER PUPIL COST	STATE WEIGHTING FACTOR	NUMBER OF STUDENTS SERVED	WEIGHTED STUDENT UNIT (2) X (3)	STATE JOM PER STUDENT AMOUNT (2) X$80.93	STATE ALLOCATION (5) X (3)
ALABAMA	$2,565	1.20	448	538	$ 97.12	$ 43,500
ALASKA	8,253	2.20	25,296	55,651	178.05	4,503,900
ARIZONA	3,093	1.20	42,326	50,791	97.12	4,110,700
CALIFORNIA	3,543	1.20	4,356	5,227	97.12	423,100
COLORADO	3,975	1.20	866	1,039	97.12	84,100
CONNECTICUT	4,743	1.26	36	45	101.97	3,700
FLORIDA	3,529	1.20	487	584	97.12	47,300
IDAHO	2,484	1.20	1,930	2,316	97.12	187,500
IOWA	3,619	1.20	586	703	97.12	56,900
KANSAS	3,829	1.20	631	757	97.12	61,300
LOUISIANA	3,187	1.20	117	140	97.12	11,400
MAINE	3,472	1.20	231	277	97.12	22,400
MICHIGAN	4,176	1.20	3,533	4,240	97.12	343,100
MINNESOTA	3,941	1.20	7,963	9,556	97.12	773,300
MISSISSIPPI	2,362	1.20	470	564	97.12	45,600
MISSOURI	3,189	1.20	9	11	97.12	900
MONTANA	4,091	1.20	9,273	11,128	97.12	900,600
NEBRASKA	3,634	1.20	2,117	2,540	97.12	205,600
NEVADA	3,440	1.20	3,296	3,955	97.12	320,100
NEW MEXICO	3,195	1.20	32,655	39,186	97.12	3,171,500
NEW YORK	6,011	1.60	2,158	3,453	129.49	279,400
NORTH CAROLINA	2,982	1.20	295	354	97.12	28,700
NORTH DAKOTA	3,481	1.20	3,210	3,852	97.12	311,800
OKLAHOMA	3,146	1.20	44,775	53,730	97.12	4,348,500
OREGON	4,141	1.20	2,474	2,969	97.12	240,300
RHODE ISLAND	4,667	1.24	393	487	100.35	39,400
SOUTH DAKOTA	3,051	1.20	11,006	13,207	97.12	1,069,000
TEXAS	3,298	1.20	393	472	97.12	38,100
UTAH	2,390	1.20	3,009	3,611	97.12	292,200
WASHINGTON	3,881	1.20	6,627	7,952	97.12	643,600
WISCONSIN	4,168	1.20	5,133	6,160	97.12	498,500
WYOMING	5,114	1.36	1,315	1,788	110.06	144,700
TOTALS			217,414	287,283		$23,250,700
			Reserve for adjustments after completion of audits			1,300
			FY 1990 Adjusted Approp.			$23,252,000

a/ State average Per Pupil Cost is provided by the Digest of Education Statistics, "Average Daily Attendance, Current Expenditures, and Exclusions for P.L. 97-35 Purposes, 50 States and District of Columbia." National Average Per Pupil Cost is $1,647.

b/ Columns 2 and 5 are rounded and displayed in two digits, but calculations actually use figures to 12 decimal points. Column 2 reflects the second phase-in period of the distribution formula enacted in Public Law 100-446. The authorized minimum weight factor for FY 1990 was 1.20.

Change from FY 1991 Base:

(Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	+/- Difference
Johnson-O'Malley Educational Assistance	$	23,648	20,548	-3,100

Johnson-O'Malley Educational Assistance (-$3,100,000): The FY 1990 Congressional add-on for this program is not continued in FY 1991. While the Bureau supports the JOM Program, basic elementary and secondary education programs are a higher priority. This decrease is offset by increased funding per student on the part of states.

Object Class Distribution - Johnson-O'Malley Subactivity

	FTE	Amount
Other Services....................................	--	-$3,100,000
Total......	--	-$3,100,000

Justification of Program and Performance

Activity:	Education
Subactivity:	Continuing Education

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc.(+) Dec.(-) From Base
A. Post-Secondary Schools	$	12,277	12,110	12,592	11,829	-763
	(FTE)	(270)	(—)	(270)	(270)	(--)
B. Special Higher Education Scholarships	$	2,160	2,131	2,160	1,800	-360
C. Tribally Controlled Community Colleges:						
Operating Grants	$	15,543	15,332	15,543	15,543	--
Endowments	$	500	493	500	500	--
D. Demonstration Project	$	400	395	400	--	-400
Total Requirements	$	30,880	30,461	31,195	29,672	-1,523
	(FTE)	(270)	(--)	(270)	(270)	(--)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Continuing Education	30,880	-419	30,461

The two post-secondary schools and the tribally controlled community colleges will be funded at 1.4% below their appropriated level, and each school will determine its own program adjustments. The contracts for the Special Higher Education Scholarship Program and the Summer Law Program will be reduced by 1.4% and the adjustment will be made in number of recipients or size of grant awards.

A. Post-Secondary Schools

Objective: The objective of the two post-secondary schools, Haskell Indian Junior College (HIJC) and the Southwestern Indian Polytechnic Institute (SIPI), is to provide a variety of educational opportunities for Indian and Alaska Native students at the junior college level to prepare them to enter four-year colleges and universities or to find employment.

Base Program ($12,592,000; FTE 270): The base program includes educational costs to operate the two schools as well as the costs for maintaining the facilities. Some Indians and Alaska Natives have difficulty in competing in higher education because of restricted academic backgrounds, low income, living in isolated areas, and a lack of college orientation programs. Special consideration in designing curriculum best suited to the needs of Indians and Alaska Natives is a major concern which is strongly stressed and provided in bureau post-secondary schools.

The post-secondary schools' dormitories continue to be filled to capacity, and the number of day students is limited since neither school is located near large populations of Indians. Table 1 shows data on the number of students enrolled by semester. Tribal funds, Department of Education financial aid, the Higher Education Grant Program, and Adult Vocational Training funds are used to assist married students living off campus since dormitories are only for single residents.

Haskell Indian Junior College (HIJC) ($8,067,000; FTE 182): Haskell is located in Lawrence, Kansas, and has operated as a junior college since 1970. The college provides both an academic and a residential program for Indian students from across the country and operates the usual student services such as a dining hall, a health clinic (through the Indian Health Service), a financial aid office, a counseling center and an activities office.

Haskell is accredited by the North Central Association of Colleges and Schools and awards Associate of Arts degrees and Associate of Applied Science degrees. These degrees, as well as selected certificates, are awarded in the program areas of liberal arts, business education, and vocational-technical education. The Associate of Arts degree program provides the basic college coursework needed by students who intend to transfer to four-year colleges to pursue a baccalaureate degree. The business and vocational-technical education programs are primarily designed to prepare students for immediate employment.

In FY 1989, Haskell placed a total of 56 students in a Forest Service summer program. As a result of the program, the BIA Division of Forestry and the Forest Service assisted Haskell in initiating a pre-professional natural resources program which will prepare Haskell graduates for entering four-year colleges and completing professional level degrees in natural resource fields. In FY 1988, Haskell formalized agreements with the Forestry Departments at Colorado State University, Montana State University, University of Montana, University of Idaho, University of Minnesota and Northern Arizona University in a cooperative effort to assist in securing financial assistance for students who transfer to the forest management courses from Haskell. Agreements with other universities are also being considered. FY 1989 is the first year for the Haskell students to attend universities in this program.

The summer programs of the BIA and the Forest Service provide the potential for employment of a greater number of Native Americans in these agencies. Such programs will relieve some of the unemployment on reservations and provide almost $250,000 in summer employment earnings for students. In FY 1989, Haskell extended its cooperative education agreements to include the National Park Service, Soil Conservation Service, and the Forest Service. Two students participated in the Soil Conservation program. Private corporations also look to Haskell for promising Native American college students. Bell Laboratories continue to work with Haskell and have hired three Haskell employees for the summer to broaden their experience so that Haskell is able to offer the latest technology in electronics. Five full-time students now work at Bell Laboratories. Starting salaries for those graduates who are now working for the laboratories start at $40,000 per year.

Southwestern Indian Polytechnic Institute (SIPI) $4,525,000; FTE 88): Southwestern Indian Polytechnic Institute is located in Albuquerque, New Mexico, and opened in September of 1971 to provide Indian students with post-secondary educational programs in vocational and technical fields that are in high demand. The Institute provides both an academic and residential program for Indian students from more than 30 Indian tribes and offers a certificate program in 32 occupational areas.

Fully accredited by the North Central Association of Colleges and Schools, SIPI provides instruction in a variety of careers. The industrial training programs include architectural and electronic drafting, surveying, electronics, graphic arts, offset printing, and optical technology. The business department offers training in secretarial and clerical skills, accounting, data processing, marketing and distribution. Students entering SIPI's food preparation program may specialize in institutional cooking, chef's training or fast food management. One of SIPI's most successful programs is optical technology, which trains students in the design, manufacture and dispensing of prescription eye glasses and contact lenses. Over ninety percent of the students graduating from this program are placed in jobs with national firms.

In FY 1989, a newly developed General Educational Development (GED)/Adult Basic Education (ABE) program was offered and 25 students completed the course. This program is being funded by a grant from the State of New Mexico. This approach to GED/ABE training is designed to provide adult students with academic preparation necessary to successfully pass each section of the new GED test battery. The program features computer assisted instruction and one-on-one tutoring for all students. With the completion of the GED certification, opportunities for formal training and advanced degrees are open to students.

In FY 1990, SIPI has continued the new broadcast systems component of the electronics program which prepares students to enter the field of television broadcasting. SIPI has entered into a cooperative agreement with the three major television stations in the Albuquerque area whereby all students in this course receive extensive on-the-job training.

SIPI continues to place over 74 percent of its graduates in jobs or higher education. The job placement demand continues to be high for administrative/office occupations, optical technicians, engineering technicians, accounting technicians, and food managers.

TABLE 1 - NUMBER OF STUDENTS ENROLLED

		FY 1989 Actual		FY 1990 Actual		FY 1991 Estimate	
	Dorm Capacity	Fall 1987	Spring 1988	Fall 1988	Spring 1989	Fall 1989	Spring 1990
Haskell	708	756	689	842	725	827	700
SIPI	512	465	480	422	432	522	550
Total	1,220	1,221	1,169	1,264	1,157	1,349	1,250

The number of Indian and Alaska Native students awarded Associate Degrees or certificates of completion from the schools is shown in Table 2.

TABLE 2 - NUMBER OF GRADUATES

	FY 1988 Actual		FY 1989 Actual		FY 1990 Estimate	
	Fall 1987	Spring 1988	Fall 1988	Spring 1989	Fall 1989	Spring 1990
Haskell	35	82	38	93	40	125
SIPI	58	71	68	65	50	80
Total	93	153	106	158	90	205

Change from FY 1991 Base: (Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	+/- Difference
Haskell Indian Junior College	$	8,067	7,673	-394
	(FTE)	(182)	(182)	(—)
Southwestern Indian Polytechnic Institute	$	4,525	4,156	-369
	(FTE)	(88)	(88)	(—)
Total, Post-Secondary Schools	$	12,592	11,829	-763
	(FTE	(270)	(270)	(—)

Post-Secondary Schools (-$763,000; 0 FTE): The portions of the FY 1990 Congressional add-ons for Haskell (+$544,000) and SIPI (+$519,000) which supported one-time projects such as equipment purchases, development costs for new programs, and investigation of interest in summer school programs are not continued in FY 1991. However, the request includes $150,000 for each school to continue operation of the Natural Resources curriculums, which the bureau considers a high priority.

B. Special Higher Education Scholarships

Objective: This program provides financial assistance to Indian students for graduate level study with special emphasis on students pursuing the professions of law, education, medicine, natural resources, engineering, business administration and social work.

Base Program ($2,160,000; FTE 0): To qualify for assistance under the current program, the applicant must meet all the basic requirements of the bureau's general scholarship program (see Scholarship justification in Tribe/Agency Operations), have earned an undergraduate degree, and be officially admitted to a graduate studies program. Pre-law students, or those requiring graduate studies to qualify to enter professional career fields, may also be assisted from this program.

Table 1 reports the number of applicants and the number of scholarships awarded for the summer of 1989 and academic year 1988-89, and estimated for FY 1990.

Table 1
Applicants and Scholarships

	Academic Year 1988-89		Summer School 1989/1990 Actual		Academic Year 1989/1990 Estimate	
Applicants Funded by Field of study:	Applicants*	Awards	Applicants*	Awards	Applicants*	Awards
Law	152	101	32	27	150	96
Education	129	62	21	11	123	70
Business	59	29	4	1	39	25
Health Professions	138	82	28	21	138	82
Engineering	7	7	—	—	12	7
Natural Resources	2	1	—	1	—	—
Other Fields	74	3	3	0	69	36
Total Students Funded	561	285	88	61	531	316

*These figures represent total applicants and do not necessarily reflect that all were deemed eligible.

Historically, students receiving Special Higher Education Scholarship grants have been required to apply for all available financial aid offered at the graduate level.

Students generally seek educational loans as well as grant funds. The individual's budget is then submitted by the college financial aid officer to the Special Higher Education Program (SHEP) with "unmet need" recommendations. The maximum dollar amount available under this program is $10,000 per academic year; however, no individual grant may exceed the calculated "unmet need" recommendation submitted by the college financial aid office. If the "unmet need" exceeds the maximum allowance, the student must then apply for additional loans. Using the maximum allowance criteria, approximately 30 to 35 percent of the SHEP grant budget has been available to fund students in other than the six priority fields.

Change from FY 1991 Base: (Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	+/- Difference
Special Higher Education Scholarships	$	2,160	1,800	-360

Special Higher Education Scholarships (-$360,000): Law is a priority item in the Special High Education program and represents over 30% of total scholarships awarded. Therefore, the bureau did not continue the FY 1990 Congressional add-on of $160,000 for the summer law programs. The further decrease of $200,000 reflects the bureau's decision to fund only students who are studying in priority fields. This change will maximize the available dollars in support of the priority fields and also lighten the financial burden on individual students. There will be no reduction of the amount of grants for priority field students.

C. TRIBALLY CONTROLLED COMMUNITY COLLEGES

		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc.(+) Dec.(-) From Base
Title I	$	10,614	10,470	10,614	10,614	—
Title II (NCC)	$	4,813	4,748	4,813	4,813	—
Technical Assistance	$	116	114	116	116	—
Operating Grants	$	15,543	15,332	15,543	15,543	—
Endowments	$	500	493	500	500	—
	$	16,043	15,825	16,043	16,043	—

Objective: The objective of the program is to provide financial assistance to Tribally Controlled Community Colleges (TCCC) so that Indian and Alaska Native students may further their education in a supportive environment close to the Indian reservations.

Base Program ($16,043,000; FTE 0): Community colleges are governed by a local board of regents, a majority of whom are Indian. This enables the sponsoring tribes to pursue educational goals which are compatible with the needs and assessments of the tribes. Title I of the Tribally Controlled Community College Assistance Act, as amended, authorizes grants to the Tribally Controlled Community

Colleges to defray expenditures for academic, educational, and administrative purposes and for the operation and maintenance of all TCCCs except Navajo Community College (NCC). Grant funds are distributed to eligible Title I colleges on the basis of the calculated Indian student count (ISC). All credit hours (for full-time, part-time, and summer students) are added together and divided by 12 to arrive at the ISC for each school.

There will be 21 Title I Colleges in FY 1990. Fond du Lac was approved in FY 1988 and was funded for the first time in FY 1989. Bay Mills was approved in FY 1989 and will be funded for the first time in FY 1990.

Table 2 shows the list of Title I Tribally Controlled Community Colleges and the comparative data on the Indian Student Count (ISC), number of graduates, accreditation status, and the types of degrees and certificates awarded by each college for fiscal years 1989 and estimates for 1990.

A Title II grant is authorized for NCC for an amount necessary for operating and maintaining the College, including, but not limited to, administrative, academic, and operation and maintenance costs. Table 1 shows enrollment statistics for NCC.

Technical assistance funds in the amount of $116,000 are provided to assist the tribal colleges in gaining full accreditation and maintaining quality programs.

The FY 1991 funding request for TCCCs is a substantial increase over prior Administration funding requests, and will continue support for these programs at a level slightly above that provided in 1990.

TABLE 1 - Navajo Community College (Title II)

	Fall Semester Enrollment		Spring Semester Enrollment		Summer School Enrollment	
	Full Time	Part-time	Full Time	Part-time	Full Time	Part-Time
FY 1988 SY 87-88	490	1,236	541	1,264	396	388
FY 1989 SY 88-89	546	859	537	986	410	220
FY 1990 SY 89-90	446	893	471 *	918 *	326	550

* = Estimates
SY = School Year
The enrollment figures were provided by Navajo Community College.

TABLE 2 - Title I Colleges - Indian Student Count (ISC)

Tribal College	Actual FY 1989 ISC	Est. FY 1990 ISC a/	Accred-b/ itation	Degrees or Certificate Offered c/	FY 1989 Graduates
Bay Mills	65	120	Accred	AA, AAS, Voc.Cert.	39
Blackfeet	315	291	Accred	AA, AAS, Voc.Cert.	29
Cheyenne River	75	45	Cand	AA, AS, Voc.Cert.	7
D-Q University	127	98	Accred	AA, AS	23
Dull Knife	155	130	NA	AA, AAS	20
Fond du Lac	115	175	Accred	AA, AAS	3
Fort Belknap	123	98	Cand	AA	42
Fort Berthold	120	125	Cand	AA, Voc.Cert.	21
Fort Peck	176	206	Cand	AA, AAS, Voc.Cert.	2
Lac Courtes Oreilles Ojibwa	150	156	Cand	AA	1
Little Big Horn	100	200	Cand	AA, Voc. Cert.	20
Little Hoop	100	126	Cand	AAS, Voc.Cert.	25
Northwest Indian Community College	421	546	Cand	AS	14
Nebraska	88	164	Accred	AA, AS, AAS, Voc.Cert.	25
Oglala Lakota	701	631	Accred	AA, BS, Voc.Cert.	79
Salish Kootenai	353	411	Accred	AA, AAS, Voc.Cert.	34
Sinte Gleska	373	327	Accred	AS, AAS, BS, MA, Voc.Cert.	32
Sisseton-Wahpeton	105	107	Cand	AA, Voc.Cert.	12
Standing Rock	271	253	Accred	AA, AAS, AS, Voc. Cert.	31
Stone Child	135	151	NA	AA, AAS	21
Turtle Mountain	338	399	Accred	AA, AAS	70
TITLE I Totals	4,406	4,759			569

a/ The estimated ISC figures for 1990 were provided by the individual colleges.

b/ Accred - Fully accredited by a recognized accrediting association.
Cand - Candidate status towards accreditation.
NA - Not accredited but meets the three institutional certification requirements of Public Law 95-471 as amended.

c/ Degrees Awarded by TCCC:
ASN - Associate of Science Nursing (R.N. and L.P.N.)
AA - Associate of Arts
AS - Associate of Science
AAS - Associate of Applied Science
BS - Bachelor of Science
MA - Master of Arts
Voc.Cert. - Vocational Certificate

Endowments ($500,000): P.L. 99-428 authorized the Secretary to establish a program for making endowment grants to the Tribally Controlled Community Colleges. The endowment program was initiated in FY 1988 and was implemented under Federal Register Notice since regulations on the Tribally Controlled Community Colleges had not been finalized. In FY 1989, the colleges voted to share equally in the endowment program, and the average grant was $11,904. The endowment grants are based on a dollar for dollar match if a college was unable to generate sufficient contributions, their share was available for other colleges. Funds must be placed in a federally insured banking or savings institution, and the interest earned can be used to defray expenditures associated with the operation of the college. The following colleges received endowment grants in FY 1988 and FY 1989. Funds have not been distributed in FY 1990.

Colleges	FY 1988 Actuals	FY 1989 Actuals
Blackfeet Community College	$ 8,867	$ 4,580
Cheyenne River Community College	—	2,000
D-Q University	8,867	21,535
Dull Knife Memorial College	70,939	21,534
Fort Belknap Community College	—	2,000
Fort Berthold Community College	3,547	11,904
Fort Peck Community College	8,867	11,904
Lac Courte Oreilles Ojibwa College	3,547	11,904
Little Big Horn College	8,867	—
Little Hoop Community College	—	3,500
Northwest Indian Community College	124,143	21,534
Nebraska Indian Community College	—	7,968
Oglala Lakota College	46,110	21,535
Salish Kootenai College	21,282	11,904
Sinte Gleska College	36,947	21,535
Sisseton-Wahpeton Community College	1,775	4,860
Standing Rock College	20,572	11,904
Stone Child Community College	2,660	7,500
Turtle Mountain College	8,867	28,865
Navajo Community College	124,143	21,534
Total	$500,000	$250,000

D. Demonstration Project

Objective: The stated objective of the Demonstration Project is to develop a satellite instructional network to provide exchange of televised classroom instruction between rural Western schools and colleges and Eastern schools and colleges.

Base Program ($400,000; FTE 0): In FY 1990, Congress added funding for Tribally Controlled Community Colleges to work with staff at the National Teleteaching Research and Development Center located at Mansfield University of Pennsylvania on a demonstration project to develop a satellite instructional network. The project includes 80 participating sites and staff will be trained in self-management of their own local and regional networks and will be able to import training and/or instruction from other schools in other states. The bureau provided the funds to Standing Rock Community College which will subcontract the funds to Mansfield University and coordinate the efforts of the tribal colleges.

Change from FY 1991 Base: (Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	+/- Difference
Demonstration Project	$	400	—	-400

Demonstration Project (-$400,000; FTE 0): The $400,000 Congressional add-on for the Demonstration Project is not continued. It is inappropriate for the bureau to support the full cost of this project when there are 80 participating sites. Since the tribal colleges are not bureau operated, we have no control over their participation in such a project.

Object Class Distribution - Continuing Education Subactivity

	FTE	Amount
Other Services		-460,000
Travel		-40,000
Supplies and Materials		-323,000
Equipment		-300,000
Grants, Subsidies and Contributions		-400,000
Total	—	-$1,523,000

Justification of Program and Performance

Activity: Education
Subactivity: Tribe/Agency Operations

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
A. Scholarships	$	28,015	27,635	28,053	26,960	-1,093
B. TCCC's Snyder Act Supplement	$	916	904	923	923	—
C. Adult Education	$	3,211	3,167	3,244	3,239	-5
	(FTE)	(19)		(19)	(19)	(--)
Total Requirements	$	32,142	31,706	32,220	31,122	-1,098
	(FTE)	(19)		(19)	(19)	(--)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Tribe/Agency Operations	32,142	-436	31,706

The sequestration will be applied equitably against each location which has funding in this program. Necessary reductions will be determined at the local level or by the tribal contractors.

Base Program ($32,220,000; FTE 19): The base funding to support the tribe/agency operations for educational programs provides services to Indians whose tribes have neither the resources nor governmental capabilities to provide such services.

A. Scholarships

Base Program ($28,053,000; FTE 0): The Higher Education Program provides financial aid to eligible Indian and Alaska Native students to attend accredited postsecondary institutions which will enable them to meet their educational goals, develop leadership abilities, and increase their employment opportunities in professional fields so that they may contribute to the economic and social goals and objectives of the various tribes.

The program provides for grants to Indians, Eskimos, or Aleut students who are members of a tribe which is federally recognized and who are admitted for enrollment in an accredited college or university program leading primarily to a baccalaureate degree. A Certificate of Degree of Indian Blood or other proof of Indian blood certified by the tribal enrollment office of the bureau must be a part of the student's application. Financial need is determined by the institution's financial aid officer. Education staff at the area and agency offices provide supervision for this program. Table 1 provides statistical and historical data for selected years (1949, 1960, and 1970) and for 1979 through 1991.

The financial aid package, completed and certified by the institution's financial aid officer, serves as the principal basis for determining the bureau grant amount. The bureau grant award, combined with the package of any other assistance, cannot exceed the institution's determination of the student's need as stated in 43 CFR 674.15 and 676.15, "Coordination with Bureau of Indian Affairs Grants-in-Aid."

The bureau contribution is approximately 25 percent of the total assistance required by students. They supplement their scholarship grant with college-based awards such as Pell Grants, Supplementary Education Opportunity Grants, National Direct Student Loans, and College Work Study; other public sources such as Veterans Administration, Welfare, State Grants, Social Security, Tribal Awards, Vocational Rehabilitation; tuition waivers from the college; and parental and personal contributions.

Workload Data:

TABLE 1 - HIGHER EDUCATION GRANT PROGRAM

Fiscal Year	Appropriation	Number of Students Assisted	Average Grant Size a/	Number of Graduates	Number of Tribal Contracts	Tribal Contracts Program Direction Costs ($) and as % Appropriation
1949 b/	$ 9,390	78	$ 120	1	0	$ —
1960	250,000	612	408	65	0	--
1970	3,848,000	4,271	873	286	6	120,000 (3.1%)
1979	26,575,600	14,904	1,695	1,965	32	1,310,000 (4.9%)
1980	27,398,000	15,895	1,626	1,420	38	1,556,000 (5.7%)
1981	26,918,000	15,724	1,587	1,290	48	1,964,640 (7.3%)
1982	27,371,000	16,100	1,569	1,289	57	2,110,364 (12.4%)
1983	26,357,000	14,946	1,546	1,295	88	3,256,000 (13.0%)
1984	26,197,000	15,600	1,461	1,310	91	3,404,000 (13.0%)
1985	26,868,000	16,000	1,461	1,380	96	3,500,000 (13.0%)
1986	29,203,000 d/	14,500	1,676	1,450	96	3,645,000 (13.0%)
1987	31,168,000 d/	15,214 c/	1,800	1,102	98	3,817,000 (12.2%)
1988	28,770,000	17,800 c/	1,402	1,600	100	3,817,000 (13.3%)
1989	28,476,000	17,800	1,385	1,500	100	3,817,000 (13.4%)
1990	27,635,000	14,200	1,678	1,400	100	3,900,000 (14.1%)
1991 est.	26,960,000	13,704	1,680	1,225	100	3,900,000 (14.5%)

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a/ Calculated by subtracting program direction costs from "Appropriation" and dividing by "No. of Students Assisted".
b/ First year of the Higher Education Grant Program.
c/ Increase resulted from the Zarr vs. Barlow case which removed the requirement of 1/4 degree of Indian blood for eligibility.
d/ Both direct costs and contract support funds were included in these numbers for FY 1986 and FY 1987.

B. Tribally Controlled Community Colleges Supplement

Base Program ($923,000; FTE 0): Under the authority of the Tribally Controlled Community College Assistance Amendments Act (P.L. 98-192), the bureau provides grants to 22 tribal colleges for academic and administrative purposes and for the operation and maintenance of the colleges. These community colleges are governed by a local board of regents, a majority of whom are Indian. This enables the sponsoring tribes to pursue educational goals which are compatible with the needs of their people. Funding charts and student participation data are provided under Continuing Education, Tribally Controlled Community Colleges.

Some tribes choose to supplement the bureau grants with funds available through the Indian Priority System. The following table compares the FY 1990 and FY 1991 supplemental funding provided to the listed colleges in addition to their grant from Education.

	Tribal College	FY 1990 Request	FY 1991 Estimate
Aberdeen Area:			
Rosebud Agency	Sinte Gleska Community College	$143,000	$144,000
Pine Ridge Agency	Oglala Lakota Community College	313,900	314,900
Turtle Mountain Agency	Turtle Mountain Community College	75,700	75,700
Fort Berthold Agency	Fort Berthold Community College	49,400	50,400
Billings Area:			
Northern Cheyenne Agency	Dull Knife Memorial College	334,000	338,000
		$916,000	$923,000

C. Adult Education

Base Program ($3,244,000; FTE 19): The Adult Education program provides educational opportunities and learning experiences to enable adult Indian and Alaska Natives to complete high school graduation requirements, acquire basic literacy skills, and gain new skills and knowledge to improve their functioning as individuals and as members of the community.

Typical of the courses offered are: Adult Basic Education (ABE); preparation for the General Educational Development Test (GED); life-coping skills courses such as budgeting, filling out applications, drivers' training, and consumer awareness; instructional information services from federal, state, and tribal programs (e.g., Medicare, Social Security, filing of federal and state taxes, entitlements, real estate, and trust services); continuing education courses designed to update the knowledge and skills of the participants (e.g., typing, shorthand, computer literacy); and community education classes of personal interest. This education program also encompasses special programs for the elderly.

Program staff members conduct needs assessment surveys, recruit participants, teach some of the courses, provide guidance and counseling with regard to educational, career, and employment opportunities, and coordinate the bureau adult education program with other existing federal and non-federal programs and activities to develop occupational and related skills for Indian adults to enable them to become more employable and productive.

Workload Data: In FY 1989, 75 tribes will administer the Adult Education Program under P.L. 93-638 contracts; 13 programs will be administered by bureau agency offices.

TABLE 1 - Appropriations, Number of Adult Education Programs and Participants, and Average Cost/Participant

Fiscal Year	Appropriation	Number of Adult Educ. Programs	Number of Adult Participants	Average Cost per Participant
1982	$ 4,659,000	77	13,859	$ 336
1983	3,697,000	68	12,899	287
1984	3,747,100	88	14,607	257
1985	3,474,000	88	13,520	257
1986	3,391,000 a/	88	12,800	265
1987	3,496,000 a/	88	13,000	269
1988	3,141,000	88	12,000	262
1989	3,138,000	88	12,500	251
1990	3,181,000	88	12,500	255
1991 estimate	3,239,000	92	12,500	259

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a/ Included contract support funds.

Change from FY 1991 Base:

(Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Request	+/- Difference
Scholarships	$	28,053	26,960	-1,093
Adult Education	$ (FTE)	3,244 (19)	3,239 (19)	-5 (--)
Total Requirements	$ (FTE)	31,297 (19)	30,199 (19)	-1,098 (--)

Scholarships (-$1,093,000): The change in scholarships results from the application of the Indian Priority System at the tribe/agency locations shown below.

	FY 1990 Enacted	FY 1991 Request	+/- Difference
Aberdeen Area	3,216,700	3,220,000	+3,300
Anadarko Area	2,361,900	1,801,700	-560,200
Billings Area	1,898,000	2,005,000	+107,000
Juneau Area	3,175,800	3,218,400	+42,600
Minneapolis Area	2,569,900	2,484,200	-85,700
Muskogee Area	1,469,700	1,467,500	-2,200
Sacramento Area	440,000	353,000	-87,000
Phoenix Area	2,399,600	2,177,100	-222,500
Albuquerque Area	1,600,600	1,339,000	-261,600
Navajo Area	6,046,000	6,046,000	—
Portland Area	2,095,400	2,052,100	-43,300
Eastern Area	741,400	758,000	+16,600
TOTAL TRIBAL PRIORITIES	$28,015,000	$26,922,000	$-1,093,000
ADJUSTMENT:			
FY 1991 Federal Pay Adjustments		+38,000	
FY 1991 REQUEST..................................		$26,960,000	

Adult Education (-$5,000): The change in adult education results from the application of the Indian Priority System at the tribe agency locations shown below.

	FY 1990 Enacted	FY 1991 Request	+/- Difference
Aberdeen Area	$ 349,300	$ 338,800	$-10,500
Andarko Area	367,100	440,600	+73,500
Juneau Area	236,200	206,900	-29,300
Minneapolis Area	62,100	61,100	-1,000
Muskogee Area	142,300	141,000	-1,300
Phoenix Area	80,400	93,600	+13,200
Sacramento Area	202,000	207,000	+5,000
Albuquerque Area	352,400	317,000	-35,400
Navajo Area	482,000	489,800	+7,800
Portland Area	502,600	485,300	-17,300
Eastern Area	434,600	424,900	-9,700
TOTAL TRIBAL PRIORITIES	$3,211,000	$3,206,000	$ -5,000
ADJUSTMENTS			
One additional workday		+3,000	
Adjustment for Administrative and Staffing Efficiencies		-12,000	
FY 1991 Federal Pay Adjustments		+10,000	
P.L. 93-638 Pay Adjustment		+13,000	
Federal Employees Retirement System (FERS)		+19,000	
FY 1991 REQUEST..................................		$3,239,000	$ -5,000

Object Class Distribution - Education Tribe/Agency Subactivity

	FTE	Amount
Total Personnel Compensation....................................	—	$+19,000
Personnel Benefits...		+2,700
Grants, Subsidies and Contributions...........................		-1,119,700
Total..	—	$-1,098,000

Activity Summary

(Dollar amounts in thousands)

Activity: Tribal Services

Subactivity	FY 1989 Actual Approp.	FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1990 Base	FY 1989 Estimate	+/- From Base
Tribal Government Services	8,786	7,226	7,128	6,791	7,847	+1,056
Social Services	93,222	92,588	91,332	94,428	93,128	-1,300
Law Enforcement	4,016	4,880	4,814	4,931	5,373	+442
Self-Determination Services	57,644	58,626	57,830	45,979	49,366	+3,387
Employment Development	2,685	3,059	3,018	3,076	2,116	-960
Tribe/Agency Operations	124,812	132,785	130,983	134,832	144,351	+9,519
Total	$291,165	299,164	295,105	290,037	302,181	+12,144
Calendar Year Contracting	---	54,000	53,271	---	---	---

Justification of Program and Performance

Activity: **Tribal Services**
Subactivity: **Tribal Government Services**

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
A. Aid to Tribal Government	$	5,001	4,933	4,563	5,619	+1,056
	(FTE)	(84)		(84)	(94)	(+10)
B. Tribal Courts	$	2,225	2,195	2,228	2,228	—
	(FTE)	(3)		(3)	(3)	(—)
Total Requirements	$	7,226	7,128	6,791	7,847	+1,056
	(FTE)	(87)		(87)	(97)	(+10)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Tribal Government Services	7,226	-98	7,128

The reduction of $98,000 will be accomplished by reducing employee travel and postponing the filling of vacant positions.

A. Aid to Tribal Government

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Community Services, General:						
Area Office Operations	$	141	139	142	367	+225
	(FTE)	(4)		(4)	(5)	(+1)
Central Office Operations	$	303	299	304	354	+50
	(FTE)	(7)		(7)	(8)	(+1)
Substance Abuse Coord. Office	$	251	248	255	255	—
	(FTE)	(3)		(3)	(3)	(—)

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
All Other Aid to Tribal Government:						
Area Office Operations	$ (FTE)	1,294 (42)	1,276	1,306 (42)	1,454 (42)	+148 (--)
Central Office Operations	$ (FTE)	2,012 (28)	1,985	1,731 (28)	2,364 (36)	+633 (+8)
New Tribes - Undistributed	$	1,000	986	825	825	--
Total	$ (FTE)	5,001 (84)	4,933	4,563 (84)	5,619 (94)	+1,056 (+10)

Objective: The objectives of this program are to: (1) improve tribal governments' operational capabilities through the provision of technical and financial assistance so they can better serve tribal members and communities; (2) ensure the timely submission of judgment plans ensuring, to the greatest extent practicable, that tribal plans for utilization of the money are adopted; and (3) ensure the timely processing of petitions from non-federally recognized Indian tribes or groups to determine their proper relationship with the federal government.

Base Program ($4,563,000; FTE 84): The Aid to Tribal Government program contains a number of separate and distinct program elements providing technical and financial assistance to Indian tribes.

Community Services, General ($446,000; FTE 11):

Area Office Operations ($142,000; FTE 4): This program provides staff specialists and program advisors to the area directors on all matters related to the Tribal Services program.

Central Office Operations ($304,000; FTE 7): This program provides staff specialists and program and policy advisors to the Assistant Secretary-Indian Affairs on all matters related to the Tribal Services program.

Substance Abuse Coordination Office ($255,000; FTE 3): This office was established in compliance with Public Law 99-570, the "Anti-Drug Abuse Act of 1986". The primary focus of the office is coordination and oversight of all bureau programs which concern the use and abuse of alcohol and drugs, including construction activities. The major bureau prevention activities include identification, crisis intervention, referral, and followup. The office also provides oversight of activities concerned with trafficking, interdiction, and eradication of addictive substances. Additionally, the office works very closely with the Indian Health Service through a Memorandum of Agreement to coordinate all programs and resources available to tribes.

All Other Aid to Tribal Government ($3,037,000; FTE 70)

Area Office Operations ($1,306,000; FTE 42): The majority of the area office funding is used to provide technical assistance to approximately 311 federally recognized Indian tribes in the lower 48 states and 301 Alaska Native groups. The area staff assists the tribes and groups in developing, improving or amending tribal constitutions, bylaws, codes and ordinances and membership rolls; conducting elections; reviewing and approving tribal attorney contracts; ensuring the integrity of the separate branches of government; resolving issues involving intratribal disputes, membership, recall and removal; and providing related assistance to tribal governments. In addition, the area office staff provides technical assistance in developing proposals for the use of judgment funds and conducts the Hearings of Record. Once a distribution plan becomes effective, the area staff implements the plan and has the responsibility of performing the enrollment work necessary for making a per capita distribution. When the Secretary has been directed to prepare a payment roll (e.g., when the award is to be distributed on a descendancy basis), applications for enrollment are usually filed with a bureau area director. The enrollment staff is also responsible for certifying enrollment as a member of a federally recognized tribe and/or the possession of federally recognized Indian blood for the purposes of qualifying individuals for federal service and benefits available to Indian people.

Central Office Operations ($1,731,000; FTE 28): In addition to providing overall program management, the central office staff provides technical assistance in the areas of tribal claims, tribal enrollment, tribal government, and federal acknowledgement of tribal entities not currently recognized by the bureau. Tribal claims involve the central office in two ways:

--providing technical assistance to tribes and their claims attorneys on the prerequisites for obtaining Secretarial approval of compromise settlements of claims pending before the U.S. Claims Court, many of which are multimillion dollar settlements, and auditing attorney fees and expense vouchers after judgments are awarded.

--performing the ethnohistorical research for beneficiaries of judgment awards and processing detailed plans or preparing legislation for tribal use of the judgment funds, in compliance with the Indian Judgment Fund Distribution Act. The type of work performed includes the identification of modern-day tribal beneficiaries and often involves complex determinations where more than one tribe is involved. In those instances where funds are to be distributed to descendants of historical tribes, the staff develops the eligibility criteria which will govern an individual's right to participate in the judgment fund distribution. Once the beneficiaries have been identified and the area offices have held a Hearing of Record, the central office staff develops the Judgment Fund Distribution Plan or proposed legislation for submission to the Congress.

The Tribal Enrollment program provides technical assistance to area, agency and tribal staffs concerning development or maintenance of membership criteria or procedures, preparation and maintenance of tribal membership and tribal payment rolls, and certification or computation of degree of Indian blood. As required by law or provided for in tribal governing documents, the enrollment program staff reviews appeals arising from the rejection of applications for membership or enrollment at the tribal and/or area level. It also reviews cases where individuals have questioned the degree of Indian blood shown for them or their ancestors in the official records affecting their eligibility for membership and/or for services and benefits.

The Tribal Relations program provides technical assistance to area, agency and tribal staff concerning the development and amendment of tribal constitutions, ordinances and other governmental documents. Efforts in this area are ongoing and reflect a commitment to modernize tribal governing documents; foster stable tribal governments; and equip tribes with the mechanisms to manage and regulate the affairs of the tribe, its members and other reservation residents. The program processes petitions from tribal members for Secretarial action, such as calling an election to adopt a constitution, and processes appeals from administrative actions relating to tribal government. Intratribal disputes are closely monitored for possible program involvement requiring mediating resolution efforts, or when resolution efforts fail, recommending specific action to bureau line officials.

The Acknowledgment and Research program is responsible for researching and processing petitions for the federal acknowledgment of Indian groups not currently recognized by the bureau. The bureau has established criteria in 25 CFR 83 which are used to evaluate these petitions. There are approximately 200 unrecognized groups in the nation, of which 115 have formally petitioned the bureau. Of the 115 formal petitions received by the bureau, 76 cannot be processed without additional supporting material from petitioning groups; one was withdrawn by the petitioning group; 24 have been reviewed; and 14 are backlogged, with 4 being reviewed, 3 awaiting active consideration, and 7 awaiting deficiency review. Acknowledgement establishes a inter-governmental relationship with those tribes that can meet the criteria, entitling them to special Indian services of the bureau and other federal, state, local, and private agencies.

The Judicial Services program is responsible for training and bureauwide technical assistance to field personnel and tribal judicial systems on organization and management, civil and criminal jurisdiction, judicial codes and procedures, and court standards; the development, establishment and improvement of tribal judicial systems in conjunction with tribal authorities, the Interior Department's Solicitor, the Department of Justice, and the federal courts; the development and implementation of model codes and systems and their modification to meet local tribal needs; the review of tribal liquor ordinances for compliance with 18 U.S.C. 1161 and their preparation for publication in the Federal Register; the development or review of regulations, legislative proposals, and policies involving tribal judicial systems; and the coordination of bureau interaction with other federal agencies, national Indian judicial associations, and professional organizations to foster greater exchange of information and pooling of resources in the development of tribal judicial systems. Judicial Services utilizes the Judicial Services Center and Special Tribal Courts funding to assist in the implementation of these functions.

New Tribes - Undistributed ($825,000; FTE 0): The New Tribes program provides the initial source of funding for newly acknowledged tribes and enables them to begin federally-funded operations. New tribes are expected to assess their needs, design or propose operational programs to meet their needs, and submit proposed budgets to implement their programs.

The base funding will provide services to the Coquille Tribe (Oregon) which has a service population of 550 and the Lac Vieux Desert Band of Chippewa Indians

(Michigan) which has a service population of 201. Based on the conference report language accompanying the FY 1990 appropriation, the base funding was equally divided between these two tribes at $412,500 each.

Change from FY 1991 Base: (Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	+/- Difference
Community Services General				
Area Office Operations	$	142	367	+225
	(FTE)	(4)	(5)	(+1)
Central Office Operations	$	304	354	+50
	(FTE)	(7)	(8)	(+1)
All Other Aid to Tribal Government				
Area Office Operations	$	1,306	1,454	+148
Central Office Operations	$	1,731	2,364	+633
	(FTE)	(28)	(36)	(+8)
Total	$	3,483	4,539	+1,056
	(FTE)	(39)	(49)	(+10)

Community Services, Area Office Operations (+$225,000; FTE +1): This increase is the result of priorities established at the following area offices:

Area Office	FY 1990 Enacted	FY 1991 Request	Difference
Juneau Area	$ ---	$ 125,000	$+125,000
Phoenix Area	---	100,000	+100,000
Sacramento Area	53,000	53,000	---
Eastern Area	88,000	88,000	---
TOTAL AREA PRIORITIES	$141,000	$ 366,000	$+225,000
ADJUSTMENTS:			
One additional workday		+ 1,000	
Adjustment for Administrative and Staffing Efficiencies		- 3,000	
FY 1991 Federal Pay Adjustments		+ 2,000	
Federal Employees Retirement System (FERS)		+ 1,000	
FY 1991 REQUEST..................................		$ 367,000	$+225,000

Community Services, Central Office Operations (+$50,000; FTE +1): The increase of $50,000 at the Central Office will enable the bureau to hire a Deputy to the Deputy to the Assistant Secretary for Tribal Services. The deputy would provide program management and oversight for tribal services programs.

All Other Aid to Tribal Government, Area Office Operations (+$148,000; FTE 0): This increase is the result of priorities established at the following area offices and a $105,000 increase for support costs of the Eastern Area Office to offset costs of servicing newly recognized tribes which the area office has been required to absorb.

Area Office	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$ 249,000	$ 262,000	$ +13,000
Anadarko Area	149,000	149,000	--
Billings Area	75,000	50,000	-25,000
Juneau Area	120,000	120,000	--
Minneapolis Area	133,000	133,000	--
Muskogee Area	84,000	49,000	-35,000
Phoenix Area	61,000	61,000	--
Sacramento Area	107,000	172,000	+65,000
Albuquerque Area	84,000	109,000	+25,000
Navajo Area	82,000	82,000	--
Portland Area	150,000	150,000	--
TOTAL AREA PRIORITIES	$1,294,000	$ 1,337,000	$ +43,000
ADJUSTMENTS:			
One additional workday		+ 4,000	
Adjustment for Administrative and Staffing Efficiencies		- 23,000	
FY 1991 Federal Pay Adjustment		+ 18,000	
Federal Employees Retirement System (FERS)		+ 13,000	
PROGRAM ADJUSTMENTS:			
Eastern Area to provide support to New Tribes		+105,000	+105,000
FY 1991 REQUEST..................................		$ 1,454,000	$ +148,000

All Other Aid to Tribal Government, Central Office Operations (+$633,000; FTE +8): Within this increase $500,000 will fund two additional review teams for the Branch of Acknowledgment and Research to accelerate the final determinations process for recognizing new tribal groups. Each team will consist of one anthropologist, one historian, and one genealogist. Additional genealogical research will be performed under contract, and two positions will be added to Enrollment. The remaining $133,000 will fund the implementation of the settlement roll and electoral provisions of the Hoopa Yurok Settlement Act, P.L. 100-580, which provides that the Secretary shall prepare a settlement roll, provide for an appeals process, and make a final determination of eligibility. Upon the completion of the roll and attendant determination of tribal membership, the Secretary must hold an election to determine the Interim Council of the Yurok Tribe, consult with tribal entities on the draft constitution, and hold an election for the adoption of the constitution.

B. Tribal Courts

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Special Tribal Courts	$	1,565	1,544	1,568	1,568	—
Judicial Services Center	$	660	651	660	660	—
	(FTE)	(3)		(3)	(3)	(—)
Total Requirements	$	2,225	2,195	2,228	2,228	—
	(FTE)	(3)		(3)	(3)	(—)

Objective: The objective of this program is to improve and maintain the judicial capabilities of Indian tribes so as to ensure the speedy and impartial adjudication of violations of tribal law and the resolution of civil disputes.

Base Program ($2,228,000; FTE 3):

Special Tribal Courts ($1,568,000; FTE 0): The Special Tribal Courts funding enables the bureau to provide directly to tribal courts the ability to make needed improvements as well as to provide funding for training, technical assistance and evaluation services for tribal judicial systems and personnel on a nationwide basis. In FY 1989, emphasis was placed on increasing the capabilities of existing tribal court systems in case management improvement, child abuse, Indian Youth and Family Law, and drug abuse. In addition, three intertribal appellate court systems were established: the Wyoming-Montana system in the Billings Area; the Northwest system in the Portland Area; and the Southwest system in the Albuquerque Area. The bureau has provided an average of 13 training sessions each year. Formal coursework training has covered subjects such as: Civil Rights in Indian Country, Basic and Advanced Criminal Law and Procedures, Basic Civil Law and Procedures, Legal Research and Analysis, Indian Youth and Family Law, Alcohol and Substance Abuse, Child Abuse and Neglect, Tribal Court Management, Indian Housing Law, Child Sexual Abuse, and Evidence and Legal Writing. The turnover rate for all judicial personnel is high, and it is essential that training sessions be held on a regular basis.

Judicial Services Center ($660,000; FTE 3): The program provides the training and technical assistance activities of the Branch of Judicial Services through the design, development and provision of training for tribal court personnel, including on-site training services, evaluation of tribal court systems and operations. The Center also provides technical assistance for the development and improvement of tribal judicial systems. The staff works closely with the Department of the Interior Solicitor's Office, the federal court systems, and the Department of Justice in developing, establishing, and maintaining tribal judicial systems which are in full accord with constitutional and other legal guarantees. The staff reviews tribal liquor ordinances for compliance with 18 U.S.C. 1161 and processes these ordinances for publication in the Federal Register, as required by law.

Through contractual and other arrangements, the program also provides training for court personnel on substance abuse issues, such as appropriate court orders for treatment and placement and recognition of mitigating factors in sentencing.

Workload Data:

	Actual 1989	Estimate 1990	Estimate 1991
Special Tribal Courts Training			
Training Sessions (in-house)	2	3	3
Training Sessions (contract)	13	13	13
Trainees	700	720	720
Judges	(476)	(540)	(540)
Other Court Personnel	(224)	(180)	(180)

Object Class Distribution - Tribal Government Services Subactivity

	FTE	Amount
Total Personnel Compensation..............................	+10	+$ 357,000
Personnel Benefits..		+ 50,000
Other Services..		+ 649,000
Total..........................	+10	+$1,056,000

Justification of Program and Performance

Activity: Tribal Services
Subactivity: Social Services

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
A. All Other Social Services	$	2,267	2,236	2,107	2,107	—
	(FTE)	(38)		(38)	(41)	(+3)
B. Welfare Assistance Grants	$	90,321	89,096	92,321	91,021	-1,300
Total Requirements	$	92,588	91,332	94,428	93,128	-1,300
	(FTE)	(38)		(38)	(41)	(+3)

Impact of Public Law 99-177

		FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Social Services	$	92,588	-1,256	91,332

The most significant impact will be on the general assistance program where we are likely to experience a shortfall. It may be necessary to reprogram funds late in the fiscal year.

A. All Other Social Services

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Area Office Operations	$	1,169	1,153	981	981	--
	(FTE)	(29)		(29)	(32)	(+3)
Quality Control	$	242	239	242	242	--
Central Office Operations	$	856	844	884	884	--
	(FTE)	(9)		(9)	(9)	(--)
Total	$	2,267	2,236	2,107	2,107	—
	(FTE)	(38)		(38)	(41)	(+3)

Objective: The objective of this program is to provide bureauwide direction and control of the Social Services program by establishing or revising policies and procedures that will result in comprehensive and quality programs that provide protective, financial, and counseling services, as well as home or institutional care for eligible Indian adults and children.

Base Program ($2,107,000; FTE 38): The central office and area offices are responsible for providing direction on all aspects of the social services program, including technical assistance to both bureau and tribally operated social services programs.

Area Office Operations ($981,000; FTE 29): The area offices have responsibility for technical supervision of the social services programs within their geographic jurisdictions, including: development and operation of the area social services program; areawide provision of technical assistance and consultation to social services staff, tribes, and Indian organizations with respect to Indian Child Welfare Act (ICWA) programs; coordination of social services policies, programs, and procedures with those of other federal, state, and local agencies; performance of field visits for program reviews and training purposes; making recommendations regarding the social services budget, including staffing, operations, and grant funds; assistance to bureau and tribal staff in improving professional competence; and supervision of area ICWA programs. Other projects that have been initiated and that will impose additional workload include (1) joint BIA-IHS initiatives in child welfare, drug and alcohol abuse, pregnancy prevention, and placement of the mentally ill; and (2) increased involvement in protective services for children.

Quality Control ($242,000; FTE 0): While the area offices have the responsibility for monitoring and evaluating social services programs, there is the need for periodic and independent program audits for fiscal and programmatic compliance. The Quality Control Office performs these functions bureau-wide and provides followup to ensure that actions are carried out by the areas. The Quality Control staff is located in the Central Office Division of Social Services and the FTE are included below.

Central Office Operations ($884,000; FTE 9): The central office exercises programmatic direction for all functions and systems of the social services activity. Responsibilities include policy analysis, formulation, and implementation; management systems development, implementation, and evaluation; program planning, oversight, and evaluation; justification for appropriated funds; needs analysis to determine proper distribution of all grant funds; and coordination of the social services program with other bureau and federal agency programs.

Change from FY 1991 Base:

(Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	+/- Difference
Area Office	$	981	981	--
Operations	(FTE)	(29)	(32)	(+3)

Social Services, Area Office Operations ($0; FTE +3): The foregoing reflects:

--an increase of $54,000 at the Portland Area Office to support the newly authorized programs in Oregon and Washington.

--a net decrease of $54,000 as a result of priorities established at the following area offices:

Area Office	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$ 166,000	$ 172,000	$ +6,000
Anadarko Area	49,000	49,000	—
Billings Area	77,000	77,000	—
Juneau Area	78,000	78,000	—
Minneapolis Area	57,000	57,000	—
Muskogee Area	79,000	87,000	+8,000
Phoenix Area	192,000	144,000	-48,000
Albuquerque Area	131,000	80,000	-51,000
Navajo Area	260,000	291,000	+31,000
Portland Area	80,000	80,000	—
TOTAL AREA PRIORITIES	$1,169,000	$1,115,000	$-54,000
ADJUSTMENTS:			
One additional workday		+3,000	
Adjustment for Administrative and Staffing Efficiencies		-16,000	
FY 1991 Federal Pay Adjustments		+12,000	
Federal Employees Retirement System (FERS)		+35,000	
Navajo Area Transfer to Tribe/Agency Social Services		-222,000	
PROGRAM INCREASES:			
Portland Area to support new programs in Oregon and Washington		+54,000	+54,000
FY 1991 REQUEST		$ 981,000	—

B. Welfare Assistance Grants

(Dollar amounts in thousands)

		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Welfare Assistance Grants (Regular)	$	79,421	78,344	81,421	82,121	+700
EARN Demonstration	$	2,000	1,973	2,000	—	-2,000
Indian Child Welfare Act (ICWA)	$	8,900	8,779	8,900	8,900	—
Total Requirements	$	90,321	89,096	92,321	91,021	-1,300

Objective: This program provides welfare assistance and child welfare assistance to eligible Indians who cannot obtain such assistance from states or local governments; and provides Indian Child Welfare Act, Title II, grants to Indian tribes for family and child services programs designed to maintain the integrity of Indian family life and to reunite Indian children with their own families in situations where they had previously been separated.

Base Program ($92,321,000; FTE 0): The Bureau of Indian Affairs provides General Assistance (G.A.) payments to eligible Indians when such assistance is not available through the state or local public agencies. In other instances, federal legislation requires the bureau to provide social services to specific tribes. For example, Public Law 97-429 requires the bureau to serve the Texas Band of Kickapoos in Maverick County, Texas. The bureau also provides foster home payments for Indian children and provides grants to Indian tribes and organizations through the Indian Child Welfare Act.

Welfare Assistance Grants-Regular ($81,421,000; FTE 0): The following types of assistance are available to tribes and tribal members under the welfare assistance grants program.

a. General Assistance: This program provides direct financial assistance to pay basic living expenses for those Indian individuals and families whose income is below current state standards. The bureau provides services only in those states not having a general assistance program available to meet the needs of Indians as defined in 25 CFR 20.21. Assistance is currently provided in 21 states.

b. Non-Medical Institutional or Custodial Care of Adults: This assistance is provided to disabled adults who are not eligible for care from Indian Health Service, Title XIX, SSI or any other county, state, or federal program. The vast majority of this assistance has been provided in Arizona since that state did not administer a Title XIX Medicaid program until FY 1989.

c. Tribal Work Experience Program (TWEP): Tribal members who receive general assistance and work on tribal projects under TWEP receive $55 per month, in addition to their general assistance payments, for work related costs. Examples of work projects include: road repair, building maintenance, facility construction, and housing construction and repairs.

d. Miscellaneous Assistance: This program pays the burial expenses of deceased indigent Indians whose estates do not have resources available to meet funeral expenses. Other emergency assistance is also provided by this program.

e. Child Welfare Assistance: This program provides for the care of abandoned or neglected children in foster homes, private or tribal group day care homes, or in residential settings designed to provide special care. These payments are made directly or through contract to the provider in states where the bureau is authorized under 25 CFR 20.22(c) to administer a program. These children are not eligible for care under any other county, state, or federal programs. In FY 1990, the cost of residential assistance for school-aged handicapped children was combined with their educational costs which are shown in the Education activity.

Workload Data: Estimates of caseloads and unit costs provided below are based on data provided by agencies. In compiling these estimates, they consider such factors as past, current and projected caseload and unit cost trends. The monthly caseloads vary significantly based on weather conditions, fire season, and other outside factors. The caseloads and costs shown below reflect national averages.

I. CASELOAD	1989 Actual	1990 Estimate	1991 Estimate
a. General Assistance (persons per month)..........	48,875	49,400	50,000
b. Non-Medical Institutional or Custodial Care of Adults (persons per month).............	1,035	944	915
c. Tribal Work Experience Program (TWEP)...........	1,800	1,515	1,515
d. Miscellaneous Assistance:			
(1) Burial Assistance (burials per year)........	2,412	2,400	2,400
(2) Emergency Assistance (cases per month)......	72	75	83
e. Child Welfare Assistance (persons per month):			
(1) Foster home care (including family and small group care).........................	2,903	2,663	2,814
(2) Residential care for handicapped children...	449	230	460
II. AVERAGE BENEFITS ($)			
a. General Assistance ($ per person per month).....	87	88	89
b. Non-Medical Institutional or Custodial Care of Adults ($ per person per month)........	894	900	910
c. Tribal Work Experience Program (TWEP) ($ per participant per month)..................	55	55	55
d. Miscellaneous Assistance:			
(1) Burial Assistance ($ per burial).............	400	425	425
(2) Emergency Assistance ($ per case per month)..	110	111	115
e. Child Welfare Assistance ($ per child per month)			
(1) Foster Home Care...........................	400	387	403
(2) Residential Care for handicapped children...	530	540	540
III. TOTAL WELFARE GRANT COSTS BY TYPE ($000)			
a. General Assistance...........................	$51,025	$52,166	$53,400
b. Non-Medical Institutional or Custodial Care of Adults...............................	11,104	10,200	10,000
c. Tribal Work Experience Program (TWEP)..........	1,188	1,000	1,000
d. Miscellaneous Assistance:			
(1) Burial Assistance.........................	965	1,020	1,020
(2) Emergency Assistance......................	95	100	115
e. Child Welfare Assistance			
(1) Foster Home Care..........................	13,934	12,368	13,605
(2) Residential Care for handicapped children.	2,858	1,490	2,981
Total..................................	$81,169*	$78,344	$82,121

* The FY 1989 appropriation of $80,206,000 was supplemented by reprogrammings of $963,000 to fund the Welfare Assistance Program at the level shown.

Employment Assistance Readiness Net (EARN) ($2,000,000; FTE 0): Many general assistance recipients lack the most basic skills and work habits that would make them likely candidates for successful, long-term employment. Although largely untapped, potential reservation workforces are among the greatest of tribal resources. It is the vocational development and social support of that workforce that is the focus of this program.

The Employment Assistance Readiness Net (EARN) was established in FY 1988 as a three-year, community-based demonstration project designed to enable Indian individuals who receive general assistance to achieve sustained and meaningful work and to develop skills. Under EARN, six tribal projects have been selected for funding over a three-year period. These six projects will give the tribes the opportunity to create local public assistance systems that suit their own community needs. These local demonstration projects will produce data that can be used in developing a national framework for the modification and operation of local public assistance systems. Each project will have a built-in evaluation process and will participate in a national independent research evaluation system selected by the bureau for the purpose of measuring efficiency and effectiveness. Since these projects were initiated on a demonstration basis, the bureau has not revised its regulations or manuals but has waived certain requirements in order to implement this demonstration project.

Indian Child Welfare Act Grants (ICWA) ($8,900,000; FTE 0): P.L. 95-608 authorizes discretionary grants to Indian tribes and organizations in conjunction with other state or tribal funding to establish and operate Indian child and family services programs. These grants are designed to maintain the integrity of Indian family life and thus avoid the unwarranted placement for adoption or foster care of Indian children. In prior years, 100-160 tribes and Indian organizations operated such programs, including:

Systems to license and regulate Indian foster homes and adoptive homes;

Facilities for counseling and treating Indian families and providing temporary custody of Indian children;

Programs to train parents on how to care for children in danger of neglect or abuse, and provide respite for parents in stressful situations;

Day care facilities;

Programs of after-school care for high-risk children which emphasize the cultural, academic, and social needs of children;

Programs to provide recreational activities;

Programs to provide training of tribal court personnel in the legalities of the Act and in provision of quality, court-related, child welfare services;

Adoptive subsidies which provide financial assistance to families for the maintenance or special care of an adoptive child, or for the completion of the adoption process; and

Legal representation which includes providing counseling to families and consultation with tribes.

Workload Data: Most of the Title II Indian Child Welfare Act grant programs are multifaceted social services delivery systems. In FY 1991, an estimated 130 grants will be provided for a variety of different services. Because these grants differ in size and purpose, they cannot be realistically categorized by a standard unit cost or servicing format. The summary historical data follows:

	1989 Actual	1990 Est.	1991 Est.
Number of Grants............................	119	121	130
Total Dollars ($000)........................	8,878.0	8,779.0	8,900.0

Change from FY 1991 Base:

(Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	+/- Difference
Welfare Assistance Grants (Regular)	$	81,421	82,121	+700
EARN Demonstration	$	2,000	---	-2,000
Total Requirements	$	83,421	82,121	-1,300

Welfare Assistance Grants-Regular (+$700,000; FTE 0): This increase will support growing general assistance programs in the states of Washington and Oregon. FY 1990 data in these two states should provide a more accurate basis for future budget estimates.

EARN (-$2,000,000; FTE 0): The decrease reflects the completion of the EARN demonstration project in FY 1990. During FY 1991, the results of the project will be reviewed and evaluated.

Object Class Distribution - Social Services Subactivity

	FTE	Amount
Personnel Compensation..................................	+3	+$ 119,000
Personnel Benefits......................................		+ 17,000
Travel..		- 30,000
Supplies and Materials..................................		- 50,000
Equipment...		- 56,000
Other services..		- 2,000,000
Grants, Subsidies, Contributions........................		+ 700,000
Total..........................	+3	-$1,300,000

Justification of Program and Performance

Activity: Tribal Services
Subactivity: Law Enforcement

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
A. Law Enforcement	$	3,545	3,497	3,574	4,016	+442
	(FTE)	(41)		(41)	(45)	(+4)
B. Substance Abuse	$	1,335	1,317	1,357	1,357	—
	(FTE)	(10)		(10)	(10)	(—)
Total Requirements	$	4,880	4,814	4,931	5,373	+442
	(FTE)	(51)		(51)	(55)	(+4)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Law Enforcement	4,880	-66	4,814

The reduction of $66,000 from the Law Enforcement Program will be accomplished through reductions in training-related travel and the postponement of support personnel hirings and equipment purchases.

A. Law Enforcement

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Area Office Operations	$	583	575	589	640	+51
	(FTE)	(14)		(14)	(14)	(—)
Central Office Operations	$	1,350	1,332	1,372	1,613	+241
	(FTE)	(20)		(20)	(24)	(+4)
Police Academy	$	1,001	987	1,006	1,156	+150
	(FTE)	(7)		(7)	(7)	(—)
Special Law Enforcement	$	611	603	607	607	—
Total	$	3,545	3,497	3,574	4,016	+442
	(FTE)	(41)		(41)	(45)	(+4)

Objective: The Law Enforcement program provides, or assists in providing, law enforcement services for the protection of life and property; the reduction of the incidence of crime; the development of methods and expertise for successful conflict resolution and criminal investigation; the implementation of legally sanctioned remedial action and rehabilitation; the reduction of recidivism and adverse social effects; the development of preventive and outreach programs to enhance public perception of law enforcement responsibilities; the development of attendant public service skills; the assessment and evaluation of individual program accomplishments; and the development and provision of training.

Base Program ($3,574,000; FTE 41)

Area Office Operations ($589,000; FTE 14): The area office law enforcement staff functions are to: (1) assist the area director in the management of law enforcement and detention programs on reservations within the jurisdiction of the area office; (2) investigate offenses on reservations in support or in lieu of the responsible federal agency or tribal law enforcement program; and (3) perform on-going program review of bureau and tribally operated law enforcement programs within the area office's jurisdiction.

Central Office Operations ($1,372,000; FTE 20)

Central Office Staff ($470,000; 5 FTE): The central office staff provides overall program management, including staff advice and analysis as required by bureau line officers, regarding operations and policy for law enforcement and detention programs. In addition, the office is responsible for the management and operation of the Integrated Police/Law Enforcement Management System (IPLEMS). This computer system provides law enforcement programs with information on modern trends, new techniques, legislation, court decisions and other information, and provides reports and data system training. Data management and operational reports are processed on a monthly and annual basis. Special reports are also prepared and processed. The central office staff also provides general supervision and direction over two field operations: the Law Enforcement Services Unit and the Branch of Training (Indian Police Academy).

Law Enforcement Services Unit ($902,000; 15 FTE): This special unit of criminal investigators and staff experts is located in Albuquerque, New Mexico and assists various bureau and federal agencies when there are exceptionally high rates of criminal violations of the Indian Major Crimes Act, 18 U.S.C. 1152 and 1153. The organization includes two functional law enforcement branches: the Special Investigations Unit and the Police Operations Branch.

Special Investigations Unit ($532,000; 10 FTE): This branch is responsible for the development of major criminal cases involving narcotic violations, (i.e. production, distribution, and sale), sexual abuse, and child abuse or exploitation cases which will be prosecuted by the various U.S. Attorneys' offices. The members of this branch are specially trained and may be assigned to supervise and train other law enforcement officers to develop and present criminal cases with professionalism and expertise, consistent with prosecutorial criteria and guidelines, so as to increase the number and percentage of successful prosecutions in Indian Country.

Police Operations Branch ($370,000; 5 FTE): This branch is responsible for oversight of all bureau police and detention operations to ensure compliance with established policy and standards. It monitors tribal and contracted police and detention operations to determine effectiveness with respect to overall law enforcement programs; develops and recommends policy, procedures, standards and techniques for the operation of bureau police and detention facilities; and contracts with tribes for law enforcement programs. The branch is responsible for ensuring, on short notice, the availability of trained law enforcement officers to respond to emergency situations nationwide which may threaten the safety of lives, property, or tranquility on Indian reservations. The branch is responsible for the bureau's firearms policies and standards including accountability for firearms and ammunition. It conducts inspections and evaluations of bureau law enforcement programs and recommends corrective actions on program deficiencies, establishes guidelines for self-inspection to assist tribal police organizations in evaluating program performance and ensures that they are adequately administered.

Police Academy ($1,006,000; FTE 7): The training branch is located at the Indian Police Academy, Federal Law Enforcement Training Center (Marana Operations), Pinal Air Park in Marana, Arizona. The branch is responsible for providing on-site and outreach training in basic courses for bureau and tribal police recruits, and specialized advanced training courses (i.e. drug law enforcement; eradication techniques; undercover operations; sexual and child abuse investigations; jail and command management; and tactical police training) for bureau and tribal law enforcement officers.

Special Law Enforcement ($607,000; FTE 0): These funds are used to improve the quality of the law enforcement program and to meet unexpected law enforcement needs such as:

--judicial decisions which expand federal jurisdiction;
--states returning law enforcement jurisdiction to the Secretary;
--tribes retroceding law enforcement contracts;
--conditions which require additional law enforcement personnel and equipment because of confrontational or disruptive activities; or
--purchase and maintenance of specialized equipment for undercover operations.

Such situations are often unforeseen and cannot be included in the normal planning cycles. Some are critical and life threatening in nature, while others may be budgetary in nature as when funding is inadequate due to retrocession of contracts, withdrawal of supplemental law enforcement funding by a tribe, or unique requirements such as operational support and workload increases placed on law enforcement officers by neighboring jurisdictions.

For example, special law enforcement funds were used to detail police officers to the Navajo Reservation to assist tribal enforcement officers in reacting to violent demonstrations and the attempted take-over of tribal and BIA facilities. Investigators were detailed to the Navajo Reservation to conduct investigations into the assault of Navajo police officers and the death of two demonstrators. Funding was made available to hire an additional investigator in one area until area funding became available. Vehicles and firearms were provided to programs because of emergency needs.

Change from FY 1991 Base: (Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	+/- Difference
Area Office Operations	$	589	640	+51
Central Office Operations	$	1,372	1,613	+241
	(FTE)	(20)	(24)	(+4)
Police Academy	$	1,006	1,156	+150
Total	$	2,967	3,409	+442
	(FTE)	(20)	(24)	(+4)

Area Office Operations (+$51,000; FTE 0): The increase of $51,000 is the net of a $49,000 decrease based on the priorities established at the following area offices, and a $100,000 increase to initiate tribal law enforcement in Eastern Oklahoma in accordance with recent court rulings. The increase would support staff and attendant support costs in the Muskogee Area Office.

Area Office	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$ 83,000	$ 83,000	$ ---
Billings Area	65,000	65,000	---
Minneapolis Area	55,000	55,000	---
Phoenix Area	98,000	88,000	-10,000
Albuquerque Area	114,000	100,000	-14,000
Navajo Area	113,000	88,000	-25,000
Portland Area	55,000	55,000	---
TOTAL AREA PRIORITIES	$ 583,000	$ 534,000	$ -49,000
ADJUSTMENTS:			
One additional workday		+2,000	
Adjustment for Administrative and Staffing Efficiencies		-7,000	
FY 1991 Federal Pay Adjustments		+6,000	
Federal Employees Retirement System (FERS)		+5,000	
PROGRAM ADJUSTMENTS:			
Eastern Oklahoma Law Enforcement		+100,000	+100,000
FY 1991 REQUEST		$ 640,000	$+51,000

Central Office Operations (+$241,000; FTE +4): The Special Investigations Unit (SIU) of the Central Office's Division of Law Enforcement Services began operations in 1988 to address the specific problems of drug and child abuse in Indian country.

Since 1988, SIU has received 120 child abuse referrals which resulted in the opening of 42 cases, some involving multiple victims. Seven (7) of these cases have been closed with arrests and convictions and the remaining cases are still open.

The SIU, in cooperation with federal, state, and local law enforcement agencies, has initiated more than 90 drug investigations which resulted in 19 arrests and the seizure of vehicles, weapons and large quantities of controlled substances with an estimated street value of $9 million, and the dismantling of several illegal drug operations which provided narcotics to communities both on and off Indian reservations. One recent case investigated by SIU involved 4 months of undercover work and resulted in the arrest of three individuals who were allegedly the major suppliers of illegal narcotics to Indian reservations in three states.

The uniqueness of Indian communities restricts the use of traditional law enforcement practices and thus constrains drug-related investigative options. The lack of investigators with the specialized abilities and knowledge of Indian customs further complicates the investigative process. The proposed increase would enable the bureau to better address this problem, and to more adequately respond to requests for assistance in the field.

Specifically, the $241,000 increase, would enable the bureau to hire, train and equip four additional investigators and thus provide for greater response to requests for assistance from Indian country law enforcement programs.

Police Academy (+$150,000; FTE 0): The additional funding will allow the academy to provide specialized training in child abuse and illegal narcotic investigations for the Criminal Investigation Unit located in Albuquerque, New Mexico. The academy would provide Drug Abuse Resistance Education (DARE) training to bureau and tribal police officers who would, in turn, train students in bureau and tribal schools. The DARE program has proven to be highly beneficial. Law enforcement agencies nationwide consider that drug abuse resistance education begun at the elementary school level is one of the most effective deterrents to drug abuse. Other new courses include BIA certification courses for officers attending state academies and for instructors of the physical efficiency battery.

B. Substance Abuse

(Dollar amounts in thousands)

		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Substance Abuse	$	1,335	1,317	1,357	1,357	--
	(FTE)	(10)		(10)	(10)	(--)

Objective: This activity develops and implements programs to eliminate cultivation and distribution of marijuana and other illegal and controlled substances on Indian reservations.

Base Program ($1,357,000; FTE 10): These funds are used to conduct operations to reduce the supply of narcotics, marijuana, and other illegal substances on Indian reservations, and to continue training for law enforcement officers in the detection, investigation, and eradication of illegal cultivation of marijuana.

Object Class Distribution - Law Enforcement Subactivity

	FTE	Amount
Total Personnel Compensation	+4	$+159,000
Personnel Benefits		+ 22,000
Other Services		+200,000
Equipment		+ 61,000
Total	+4	$+442,000

Justification of Program and Performance

Activity:	Tribal Services
Subactivity:	Self-Determination Services

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
A. Training, Technical Assistance, and General Operations	\$ (FTE)	490 (19)	483	2,593 (19)	4,980 (7)	+2,387 (-12)
B. Contract Support	\$	56,386	55,621	43,386	44,386	+1,000
Small Tribes Core Management Grants	\$	1,750	1,726	—	—	—
Total Requirements	\$ (FTE)	58,626 (19)	57,830	45,979 (19)	49,366 (7)	+3,387 (-12)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Self-Determination Services	58,626	-796	57,830

The majority of this reduction is in contract support which is distributed to tribes based on their level of direct program funds. Since programs were sequestered at the same rate, there should be no impact on paying tribes at their negotiated indirect cost rate. The reduction in Small Tribes Core Management grants will be accomplished by reducing the size of each grant.

A. Training, Technical Assistance, and General Operations

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Area Office Operations	\$ (FTE)	490 (12)	483	490 (12)	-- (--)	-490 (-12)
Central Office Operations	\$ (FTE)	-- (7)	—	353 (7)	553 (7)	+200 (--)
Technical Assistance Grants	\$	—	--	1,750	4,427	+2,677
Total	\$ (FTE)	490 (19)	483	2,593 (19)	4,980 (7)	+2,387 (-12)

Objective: The objective of this program is to provide overall policy guidance, coordination, direction and cohesion for bureau and tribal initiatives involving contracts, grants, training and technical assistance for tribes assuming management of bureau programs, services and functions.

Specifically, technical assistance is provided to (1) enable tribes to avoid or overcome declination issues related to contract applications; (2) ensure satisfactory performance of contract or grant requirements; and (3) prevent suspension, termination or reassumption by the bureau of contract programs or grants. Technical assistance is also provided to address urgent, one-time operational needs or problems of tribes. Program funding supports bureau staff salaries and expenses necessary to administer the self-determination program at the field and central office levels.

Training is provided to tribal staff in such areas as financial management, personnel management, property control and other management systems. Training and orientation are also provided to newly elected tribal officials regarding tribal responsibilities and the procedures for contracting under P.L. 93-638, as amended by P.L. 100-472. In addition, bureau staff receive training and orientation concerning the purpose of the governing statutes and relevant regulatory provisions to ensure proper administration and oversight of contracts and grants.

Base Program ($2,593,000; FTE 19): Training and technical assistance are provided primarily by bureau P.L. 93-638 coordinators. Assistance may also be provided under cooperative agreements by other federal and non-federal staff such as the Office of Personnel Management, the Department of Agriculture and private sector consulting firms which are expert in the areas of accounting, management, planning and program operations. Training and technical assistance opportunities may also be purchased from commercial sources using grants to tribes.

Area Office Operations ($490,000; FTE 12): In the past, area offices have provided assistance to tribes in the preparation of contract and grant proposals and during the negotiation and award period; to address contract and grant performance requirements and to meet special one-time tribal requirements such as the award of special contracts to Certified Public Accounting firms for the purpose of auditing various tribally contracted programs. Technical assistance and training previously provided hereunder will be provided through technical assistance grants in FY 1991.

Central Office Operations ($353,000; FTE 7): The central office provides policy guidance, direction and coordination for tribal and bureau initiatives associated with P.L. 93-638, as amended by P.L. 100-472. This policy group serves as an advocate within the bureau by promoting innovative tribal approaches for achieving greater tribal control and through such tribal efforts as the redesign of bureau programs to meet local needs. Staff provides the interpretive analysis of bureau policies and procedures as a means of encouraging tribal assumption of bureau programs through the contract mode and/or through the exercise of other programming options available in P.L. 93-638, as amended. Staff also develops, implements revisions to, and provides for the consistent application of laws, regulations and policies relative to current and future P.L. 93-638 programming and policy directions for Indian affairs. Staff receives appeals on behalf of the bureau and tribes; recommends final decisions in cases where discretionary authorities may be applied; or processes appeals for the cognizant adjudication forum. Staff provides training and technical assistance as needed on new laws, regulations, policies, and initiatives to Area Office staffs and tribal groups, and coordinates the consultation process at the bureau level. Staff assists in arranging technical assistance for tribes through commercial and other sources to assist tribal contractors in overcoming any deficiencies in their administrative systems found in A-128 audits or independent A-123 reviews. The central office serves as the focal point for all self-determination services functions to be coordinated at the bureau level, including self-governance grants under Title III of P.L. 100-472, specialized training and technical assistance grants, contract support funding and liability insurance issues and funding.

Technical Assistance Grants ($1,750,000; FTE 0): The amendments to the Indian Self-Determination and Education Assistance Act, P.L. 100-472, require the Secretary to provide technical assistance to tribes in overcoming potential declination issues for contracting. Further, the tribes may seek such assistance from other private or public sector groups or consultants. These funds would either be granted to the tribes based on an application process, or, if the tribe wishes to use bureau staff, the funds would be used to pay for the travel and per diem costs of staff providing assistance to the tribes. These technical assistance grants will replace the small tribes core management grants, the specialized technical assistance grants, and the self-determination grants.

The technical assistance will be tailored to meet the specific needs of individual tribes and allow tribes to meet legislative and regulatory requirements. Grants will be competitively awarded to tribes with mature contract status, self-governance demonstration tribes, and tribes with no material, outstanding audit deficiencies. Technical assistance grants to tribes will be for the purposes of:

-- comprehensive reservation development, e.g., integrated program planning for centralized administration of tribal programs.

-- Grants may be awarded based on a demonstrated need, as indicated, for example, by A-128 audits, A-123 reviews of tribal programs, and monitoring reports; e.g., grants for preparing responses to delinquent audits, for contract or grant closeout activities, and for the development and implementation of corrective actions per the Single Audit Act and A-128 audit resolution policies. Tribes awarded these grants must make a written commitment to resolve problems, meet needs, or improve program operations as indicated through audit/program review processes. In cooperation with the bureau's staff, these tribes must develop a technical assistance utilization plan for inclusion in the tribes' grant proposals.

-- Grants may also be awarded to small tribes for contracting assistance, i.e., preparation of small tribes for contractual operation of federal programs, including the development of sound administrative and funds management systems, personnel systems, and property and procurement systems. The applicant tribes must recognize needs, or problems, and make a written commitment to utilize funds solely for the purpose of resolving problems or meeting needs.

The technical assistance grant program will be complemented by the results of the bureau's monitoring function which may aid both the tribe and the bureau in the establishment or documentation of a tribe's need for a technical assistance grant. Training can also be provided, at the request of the tribes, in such areas as the use of OMB Circulars A-102 and A-87, and in subjects related to basic office management, financial management, forms preparation, personnel systems management, and property management.

Workload Data: The self-determination staff acts as the focal point in assisting tribal contractors in the P.L. 93-638 contracting/grant process to deal with the varied procedures involved in the application, review, negotiation, award and implementation of P.L. 93-638 contracts and grants. They provide a substantial part of the training and assistance requested by tribes in the interpretation and understanding of P.L. 93-638 regulations and assist tribes in addressing technical problems involved in program implementation. They also aid the tribes in identifying and securing assistance needed to overcome operational difficulties. When the technical assistance requested is beyond the scope of bureau staff capabilities, they aid the tribes in securing the needed assistance from other sources.

Change from FY 1991 Base:

(Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	+/- Difference
Area Office Operations	$ (FTE)	490 (12)	— (—)	-490 (-12)
Central Office Operations	$	353	553	+200
Technical Assistance Grants	$	1,750	4,427	+2,677
Total	$ (FTE)	2,593 (12)	4,980 (—)	+2,387 (-12)

Area Office Operations (-$490,000; FTE -12): P.L. 100-472 prohibits the withholding of program operating funds for contract monitoring purposes and expands the bureau's role in providing assistance to contracting tribes. To better utilize existing staff in an expanding technical assistance mode, the functions formerly associated with area office operations have been included under the training and technical assistance programs described above. The areas which had funded self-determination training and technical assistance moved the funding to other line items during the FY 1991 planning process to fund program operations.

Area Office	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$ 63,000	--	$ -63,000
Juneau Area	259,000	--	-259,000
Muskogee Area	73,000	--	-73,000
Sacramento Area	65,000	--	-65,000
Portland Area	30,000	--	-30,000
TOTAL AREA PRIORITIES	$490,000	--	$-490,000

Central Office Operations (+$200,000; FTE 0): In the FY 1990 justification to Congress, the bureau proposed to eliminate this office and consolidate the staff and functions within the tribal government services office. After further evaluations of workload, the bureau has determined that this unit would continue to function more effectively as a separate unit. The increase would enable the office to function at the FY 1989 services level.

Technical Assistance Grants (+$2,677,000; FTE 0): The total request of $4,427,000 for technical assistance grants will provide a level of technical assistance support for tribes to replace the area office functions, the small tribes core management grants, and the former self-determination grants authorized by Section 104 of P.L. 93-638.

B. Contract Support

(Dollar amounts in thousands)

		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Indirect Costs	$	55,946	55,187	42,946	43,946	+1,000
Employee Displacement Costs	$	440	434	440	440	--
Total Requirements	$	56,386	55,621	43,386	44,386	+1,000

Objective: This activity funds tribes and tribal organizations for overhead or administrative costs incurred as a result of contracting for operation of bureau programs and funds severance pay and lump sum leave payments to Federal employees who are displaced because of contracting with Indian tribes and tribal organizations. Base Program ($43,386,000; FTE 0): The bureau utilizes P.L. 93-638 contractor indirect cost rates negotiated by the Office of the Inspector General to determine amounts needed by contractors to meet overhead or administrative costs for contracts other than education. The FY 1991 base funding reflects a base transfer of $13.0 million to fund administrative cost grants in the Office of Indian Education Programs (OIEP). This transfer is in accordance with the provisions of the Education Amendments of 1988, P.L. 100-297, which requires OIEP to pay the indirect costs of school operations and auxiliary education programs as computed utilizing a statutorily determined formula rather than by negotiated indirect cost rates or lump sum agreements. The payment of indirect costs for construction programs was authorized in P.L. 100-472, and funding is requested in the Construction Appropriation.

Change from FY 1991 Base:

(Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	+/- Difference
Indirect Costs	$	42,946	43,946	+1,000

Indirect Costs (+$1,000,000; FTE 0): Since tribes may elect to contract at any point in the year, and indirect cost rates are not finalized until later in the fiscal year, contract support funding needs are difficult to predict. In FY 1989, actual indirect costs totalled $54,783,598 and the bureau had to reprogram funds from unobligated balances in other programs to fully fund negotiated indirect cost rates and lump sum agreements. The increase of $1.0 million to the base should ensure that indirect costs for non-educational, non-construction program contracts are fully reimbursed in accordance with P.L. 100-472.

Object Class Distribution - Self-Determination Services Subactivity

	FTE	Amount
Total Personnel Compensation	-12	$ -305,000
Personnel Benefits		- 42,000
Other Services		+1,057,000
Grants		+2,677,000
Total	-12	$+3,387,000

Justification of Program and Performance

Activity: Tribal Services
Subactivity: Employment Development

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
A. Direct Employment	$	243	240	245	245	--
	(FTE)	(3)		(3)	(3)	(--)
B. Adult Vocational Training	$	2,816	2,778	2,831	1,871	-960
	(FTE)	(3)		(3)	(3)	(--)
Total Requirements	$	3,059	3,018	3,076	2,116	-960
	(FTE)	(6)		(6)	(6)	(--)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Employment Development	3,059	-41	3,018

This reduction will be accomplished by deferring the filling of a position vacated in FY 1990, deferring program reviews at some Area Office locations, and postponing planned equipment purchases at the Central Office level. Allocations to United Sioux Tribes Development Corporation, Crownpoint Institute, United Tribes Technical College and the National Ironworkers Training Program will be reduced by 1.4%.

A. Direct Employment

Program Elements		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Central Office Operations	$	143	141	144	144	--
	(FTE)	(3)		(3)	(3)	(--)
United Sioux Tribes Development Corp.	$	100	99	101	101	--
Total Requirements	$	243	240	245	245	--
	(FTE)	(3)		(3)	(3)	(--)

Objective: This program provides job placement assistance to individual Indians and Alaska Natives in order to promote their economic self-sufficiency.

Base Program ($245,000; FTE 3): Job placement services are provided to members of federally-recognized Indian tribes who have employable skills and need assistance to find suitable permanent employment based on their level of skills.

Program funds are used for staff and support services at the area and central office levels and for services performed under contract.

Central Office Operations ($144,000; FTE 3): The central office staff provides overall planning, technical supervision, and evaluation of the Direct Employment and Adult Vocational Training programs. It is responsible for establishing program direction, policy, regulations, and administrative procedures for bureauwide operations. The central office provides advice and assistance to the bureau's top administrators and other central office staff, and provides liaison with other agencies.

United Sioux Tribes Development Corporation (USTDC) ($101,000; FTE 0): Under a contract with the bureau, USTDC provides services consisting of job development, counseling, and guidance in community adjustment. It also provides followup services after job placement, including job counseling to enhance the client's capacity for continued employment.

B. Adult Vocational Training

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Area Office Operations	$	171	169	173	173	—
	(FTE)	(3)		(3)	(3)	(—)
United Tribes Technical College	$	1,708	1,685	1,721	1,261	-460
Crownpoint Institute of Technology	$	500	493	500	—	-500
National Ironworkers Training Program	$	437	431	437	437	—
Total Requirements	$	2,816	2,778	2,831	1,871	-960
	(FTE)	(3)		(3)	(3)	(—)

Objective: This program offers adult vocational training to Indians and Alaska Natives in a field where they can obtain the necessary skills to become employable.

Base Program ($2,831,000; FTE 3): The adult vocational training program provides vocational counseling, institutional training in any recognized vocation or trade, apprenticeships, and on-the-job training.

Area Office Operations ($173,000; FTE 3): The area offices are responsible for the development and operation of the adult vocational training program and work closely with the agencies and tribes in the actual placement of program participants in training and in employment upon completion of training.

United Tribes Technical College ($1,721,000; FTE 0): The United Tribes Technical College, under contract with the bureau, provides Indian applicants an opportunity for training in one of ten vocational skills, plus job placement assistance upon completion of training. Through counseling and testing, the College assists applicants in making career choices which, in most instances, are in line with the workforce needs of the applicant tribe's economy.

Crownpoint Institute of Technology ($500,000; FTE 0): The Crownpoint Institute of Technology is a residential vocational institution that offers 13 programs in vocational training to disadvantaged Indian students living on or near the Navajo reservation. The institute also provides job placement assistance upon successful completion of training.

National Ironworkers Training Programs ($437,000; FTE 0): This program provides an opportunity for Indian participants to learn the ironwork trade. The program conducts three 14 week classes each year, with approximately 30 trainees in each class. Trainees receive classroom and shop instruction. Each graduate trainee is credited with one year of work experience toward the required three years of apprenticeship training.

Workload Data:

Vocational Training Program	AVT Completions 1987 - 1988	% Placed in Employment	% Retained on-the-job After 1 Year
National Ironworkers Training Program	275	95	80
United Tribes Technical College	552	75	70

Change from FY 1991 Base:

(Dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	+/- Difference
United Tribes Technical College	1,721	1,261	-460
Crownpoint Institute of Technology	500	--	-500
	2,221	1,261	-960

United Tribes Technical College (-$460,000; FTE 0): The FY 1990 Congressional add-on of $460,000 for the United Tribes Technical College is not continued in FY 1991. This is consistent with guidance provided by the Congress that the college should seek other sources of funding for operating costs.

Crownpoint Institute of Technology (-$500,000; FTE 0): The one-time FY 1990 Congressional add-on of $500,000 for the Crownpoint Institute of Technology is not continued in FY 1991. The Conference Report on the FY 1990 Appropriations stated that the $500,000 provided in FY 1990 would be the last time funding would be provided unless authorizing legislation were enacted. The institute should continue to seek other sources of funding to support operating costs.

Object Class Distribution - Employment Development Subactivity

	FTE	Amount
Personnel Services	--	$ +6,000
Personnel Benefits	--	+800
Other Services	--	-966,800
Total	--	$ -960,000

Justification of Program and Performance

Activity: Tribal Services
Subactivity: Tribe/Agency Operations

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
A. Adult Vocational Training	$	17,646	17,407	17,688	16,916	-772
	(FTE)	(59)		(59)	(54)	(-5)
B. Other Employment Assistance	$	2,992	2,951	3,009	2,267	-742
	(FTE)	(8)		(8)	(8)	(--)
C. Community Services-General	$	1,594	1,572	1,622	2,108	+486
	(FTE)	(4)		(4)	(8)	(+4)
D. Community Fire Protection	$	1,140	1,125	1,148	1,095	-53
	(FTE)	(1)		(1)	(1)	(--)
E. Tribal Courts	$	10,527	10,384	10,643	10,692	+49
	(FTE)	(16)		(16)	(16)	(--)
F. Other Aid to Tribal Government	$	20,007	19,735	20,169	15,835	-4,334
	(FTE)	(107)		(107)	(101)	(-6)
G. Social Services	$	24,488	24,156	24,954	29,922	+4,968
	(FTE)	(194)		(194)	(218)	(+24)
H. Law Enforcement	$	51,004	50,312	52,177	56,266	+4,089
	(FTE)	(601)		(601)	(601)	(--)
I. Self-Determination Training and Technical Assistance	$	2,187	2,157	2,187	--	-2,187
	(FTE)	(25)		(25)	(--)	(-25)
J. Consolidated Tribal Government Program	$	--	--	35	9,250	+9,215
K. Self-Governance Grants	$	1,200	1,184	1,200	--	-1,200
Total Requirements	$	132,785	130,983	134,832	144,351	+9,519
	(FTE)	(1,015)		(1,015)	(1,007)	(-8)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Tribe/Agency Operations	132,785	-1,802	130,983

The sequestration will be applied equitably against each location which has funding in these programs. Necessary reductions will be determined at the local level or by the tribal contractors.

Base Program ($134,832,000; FTE 1,015): The base funding to support the tribe/agency operations for Tribal Services programs provides services to Indians whose tribes have neither the resources nor governmental capabilities to provide such services. The base program funding and description of Tribal Services programs under tribe/agency operations are as follows:

A. Adult Vocational Training

Base Program ($17,688,000; FTE 59): To meet the basic and special training needs of Indian applicants, the Secretary is authorized to undertake a vocational program that provides for counseling, guidance, institutional training in any recognized vocation or trade, apprenticeships, and on-the-job training. Approximately 400 training institutions with a recognized reputation in the field of vocational training and an established record of successfully placing their students in suitable employment upon graduation are used. These schools offer courses to the Indian trainee in areas such as welding, auto mechanics, computer programming, secretarial skills, registered nursing, cosmetology, and x-ray technology. The period of training is for a maximum of 24 months except for the registered nurse training which cannot exceed 36 months. The program is available to adult Indians, 18-35 years of age, who are members of a federally recognized tribe and reside on or near an Indian reservation. Applicants are assisted in the selection of their training program through personal counseling and interpretation of aptitude skills test results. This is to ensure that all applicants are trained in a field where they can attain the necessary skills to become employable. Employment is provided primarily by the tribes, and the private and public sectors.

In FY 1990, approximately $11.6 million will be contracted by the tribes and the remaining $6 million will be used for bureau operations at agency levels.

Workload Data:

It is anticipated that the average cost for FY 1990 will be $5,200 per trainee. Cost per trainee fluctuates from area to area due to variations in the cost of living, tuition, and other training expenses.

	FY 1990 Estimate	FY 1991 Estimate
Total Number of Trainees.........	3,394	3,245
Total Completions................	1,598	1,620
Total Job Placements.............	1,435	1,474

The bureau anticipates that, with stricter rules on repeat services, the number of completions will increase by an estimated 3.1 percent, and the number of job placements will increase. Furthermore, the bureau is placing greater emphasis on job development and job placement.

B. Other Employment Assistance

Base Program ($3,009,000; FTE 8): Job placement services are provided to members of federally recognized Indian tribes. This program assists Indians who need work and have an employable skill to find and retain suitable employment. The applicant's skills are identified from information submitted on the application form and through personal counseling. Applicants are then placed in a job that meets their skill level.

Staff in this program are vocational development specialists who place emphasis on job placement. They maintain contact with employers in the private sector through state and private employment offices and personal contacts. Screening applicants to be employed is done in accordance with hiring policies of the prospective employer. In most cases, the staff is acquainted with those hiring policies. Applicants are placed in those fields where jobs are available and where they are qualified for employment.

Workload Data:

It is anticipated that the average cost for FY 1991 will be $2,700 per participant. The average cost per trainee fluctuates from area to area due to the mobility of trainees, e.g., in Arizona and Oklahoma travel is less difficult than in Alaska or other isolated areas.

	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate
Total Number of Participants	1,072	1,060	1,108
Average Cost Per Participant	$2,600	$2,650	$2,700

C. Community Services, General

Base Program ($1,622,000; FTE 4): At some agencies, this program provides oversight for Tribal Services programs. Some agency funding is used for consolidated human resource programs that are operated by tribes under P.L. 93-638 contracts.

D. Community Fire Protection

Base Program ($1,148,000; FTE 1): This program is necessary for those tribes which do not receive fire protection services from state or local governments. During FY 1989, tribes under 34 agencies received funds ranging from $600 to $147,000 for this program. The larger community fire protection programs provided funds to train volunteer firefighters, repair existing firefighting equipment, purchase additional equipment, and meet personnel costs. Funds are used to purchase basic equipment such as smoke detectors, fire extinguishers, fire escapes and emergency lights for public buildings.

E. Tribal Courts

Base Program ($10,643,000; FTE 16): This program pays the personnel and administrative costs for the operation of 130 tribal courts and 18 courts of Indian offenses (courts established and operating pursuant to 25 CFR Part 11). These courts enforce and adjudicate the criminal provisions of tribal law and order codes and, as is the case with courts of Indian offenses, the criminal provisions found in 25 CFR Part 11. They also adjudicate civil disputes based upon the same authorities cited above. The criminal and civil adjudication provisions enforced by Indian courts vary considerably in their coverage, sophistication and procedures. The main efforts to upgrade these tribal codes are assumed by the tribes themselves, with assistance provided by bureau staff primarily at the area and central office program levels.

The courts of Indian offenses differ from tribal courts only with respect to their jurisdictional authority for existence. Whereas the authority for the establishment and existence of tribal courts is generally found in tribal constitutions, courts of Indian offenses have no such authorization. They have been established by the Bureau of Indian Affairs primarily based upon a determination that a tribe has, or must, exercise civil and criminal jurisdiction over its members and a further finding that the traditional agencies for the enforcement of tribal law and customs have become inoperative, and no adequate substitute has been provided for them under federal or state law. In instances where there has been such a declaration and finding, a ready-made set of laws and procedures has been provided for use until such time as the tribe itself adopts a tribal law and order code and begins enforcing that law. At the tribal level these funds are provided to pay for judges, prosecutors, defenders, clerks of court, probation officers, juvenile officers and a variety of other court-support personnel. Additionally, the program pays for the administrative operational expenses incurred in running a court system.

Workload Data:	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate
Tribal Court Cases	275,679	280,000	290,000
Courts Evaluated	9	15	20
Tribal Codes Revised	3	10	10

F. Other Aid to Tribal Government

Base Program ($20,169,000; FTE 107): Approximately 75 percent of this funding is contracted to tribes. During FY 1989 approximately 120 tribes and Alaska Native villages contracted with the bureau in the following areas: comprehensive planning; tribal enrollment; general tribal administration; and work/learn programs.

The comprehensive planning program is aimed at assisting tribal governments to prepare or revise a plan that outlines a program of priorities and action for the development of all sectors of the community or reservation. The tribal enrollment program enables tribes to maintain and update tribal enrollment records for the purpose of making tribal per capita or dividend distributions, to hold secretarial and tribal elections, and to identify tribal members for the purpose of exercising off-reservation treaty rights. The general tribal administration program enables tribes to develop and update tribal government documents, develop policy, legislation and regulations in administrative support. The work/learn program's objective is to clean up property in and around Indian villages. In addition to cleaner villages, the program provides work opportunities and experience to Indian youth who are enrolled in high school and between 13 and 20 years old. For programs operating during the summer, students who have completed the 8th through the 12th grades are eligible.

Workload Data:	Actual FY 1989	Estimated FY 1990	Estimated FY 1991
Judgment Fund Distribution Plans/ Legislation	5	21	17
Payment rolls	53	52	58
Tribal rolls	98	112	119
Certificates of Degree of Indian Blood (Indian Preference, Title IV)	59,780	76,682	103,315
Total Constitutions	65	76	82
Constitutional Development Training (Number of Trainees)	225	150	150

G. Social Services

Base Program ($24,954,000; FTE 194): The base program provides funds for 194 full-time equivalent bureau employees as well as for 76 tribal social services contract programs. The breakdown of the bureau staff FTE is as follows:

Social Workers	177
Clerical	17
Total	194

The tribal contract employee positions are not fixed in number and vary according to changes in contracts. The program also funds general operational expenses incurred for administering the entire bureau-operated program and the tribal contract programs. These expenses include: staff development and training; travel; equipment; and office operations.

Bureau and tribal staff include trained social workers, para-professional social workers, and clerical personnel. Their duties include receiving applications for assistance, determining eligibility, computing grant amounts, providing social casework counseling and other services including case review and follow-up. They also refer clientele with specific needs to non-bureau programs.

The same staff who administer the overall program also provide counseling and other social casework services and technical assistance and professional expertise to tribal entities in developing tribal social services programs. Since their duties are multifaceted and encompass all program functions, no distinction is made between costs incurred for counseling and costs incurred for administration.

Workload Data: The monthly caseload for counseling is:

Fiscal Year	Number of Persons Counseled
1983 Actual	15,726
1984 Actual	15,775
1985 Actual	15,755
1986 Actual	16,000
1987 Actual	16,250
1988 Actual	16 250
1989 Actual	17,600
1990 Estimate	21,500
1991 Estimate	23,000

H. Law Enforcement

Base Program ($52,177,000; FTE 601): Individual treaties with Indian tribes, legislation, and federal court decisions have created a unique criminal justice requirement on reservations where state and local units of governments do not have executive, civil and criminal jurisdiction over offenses committed by persons of Indian descent, and for the enforcement of violations of federal law. The development and operation of criminal justice systems by the federal government and tribal governments in providing police, detention and judicial services result from the lack of services by local units of state, county, and city governments. There are 28 states with 224 reservations where the bureau and tribal governments provide these services to varying degrees.

The bureau uses criminal justice personnel to staff and operate the overall program. Staff includes criminal investigators, uniformed officers, detention officers and radio dispatchers/clerks. The combined federal/tribal law enforcement staff serves an estimated Indian population of 862,000 and patrols approximately 100,000 square miles of Indian Country, as well as a number of off-reservation independent Indian communities.

Criminal investigators are responsible for investigating violations of various criminal statutes in combination with the FBI, tribal police, county sheriffs, and state police; and arresting and assisting in the prosecution of federal law violators. About 1,080 uniformed officers (including 800 tribal officers) provide patrol and public safety services within Indian Country. Federal conservation officers concentrate primarily on enforcement aspects relating to federal laws, treaty rights and tribal ordinances regarding hunting, fishing, and trapping within Indian Country and within designated off-reservation areas. Conservation officers are funded through the Trust Responsibilities program with the exception of the Umatilla and Hoopa Reservations where they are funded under the law enforcement program.

Approximately 75 percent of the operating costs at the tribe/agency level are for salaries and benefits of criminal justice staff. The remaining 25 percent is to be used for automotive operations and repair, bureau-operated or contracted detention services, travel and per diem, evidence purchases, equipment rental, individual training and communications and supplies.

Workload Data: The estimates below are provided as workload data for FY 1989, FY 1990, and FY 1991. As a result of increased patrols, reduced response time, and additional police resources, the number of arrests and investigations has increased over the FY 1989 level.

	FY 1989	FY 1990	FY 1991
Complaints Investigated	193,000	203,000	213,000
Public Safety Duties Performed	741,000	778,000	817,000
Arrests	115,000	121,000	127,000
Traffic Violation Warnings	40,000	42,000	44,000
Daily Detention Average	1,100	1,200	1,300
Crime Index Rate	2,300	2,500	2,600

I. Self-Determination - Training and Technical Assistance (T/TA)

Base Program ($2,187,000; FTE 25): In order to provide assistance in accounting, management, planning, and program operations, training and technical assistance (T/TA) are provided by bureau contract officer and/or grant officer representatives (COR/GOR) as well as by other federal and non-federal staff from such organizations as the Office of Personnel Management, Department of Agriculture and private consulting firms. Assistance is provided by agency personnel to tribes in the preparation of contract and grant proposals and during the negotiation and award period. Assistance is also provided to address contract and grant performance needs and to meet special one-time tribal requirements. Technical assistance is tailored to meet the specific unique needs of individual tribes and is provided to allow tribes to meet the requirements of basic legislation and pertinent regulations.

J. Consolidated Tribal Government Program

Base program ($35,000; FTE 0): In FY 1982, the Consolidated Tribal Government Program (CTGP) was initiated to allow tribes to pool programs with similar and compatible objectives or benefits and to administer such programs as one unit rather than as separate, distinct programmatic activities. As separate program activities, such programs usually did not share common administrative practices and processes. Each had its own administrative component. Combining program activities also allowed for the pooling of common administrative components, thereby reducing overall costs to the contractor and providing a greater degree of benefits to Indian people. This was known as the CTGP Prototype Project Plan, and was non-banded. In order to effectively achieve commonality of programs, tribes had to request the reprogramming of funds after distribution by the Bureau.

K. Self-Governance Grants

Base Program ($1,200,000; FTE 0): As a result of outside witness hearings on the President's budget, the Congress added appropriations to the bureau to allow interested tribes to plan to consolidate, redesign or otherwise direct the operation of bureau programs at the reservation level. In FY 1989, nine of the ten original grant recipients received additional planning grants based on the merits of their re-applications to continue to study and plan for the consolidation or redesign of tribal programmatic and fiscal priorities. In addition, seven other tribes received initial planning grants. These planning grants, and the demonstration projects expected as a result, relate to Title III of P.L. 100-472, the 1988 amendments to P.L. 93-638.

Change from FY 1991 Base:

(Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	+/- Difference
Adult Vocational Training	$	17,688	16,916	-772
	(FTE)	(59)	(54)	(-5)
Other Employment Assistance	$	3,009	2,267	-742
Community Services, General	$	1,622	2,108	+486
	(FTE)	(4)	(8)	(+4)
Community Fire Protection	$	1,148	1,095	-53
Tribal Courts	$	10,643	10,692	+49
Other Aid to Tribal Government	$	20,169	15,835	-4,334
	(FTE)	(107)	(101)	(-6)
Social Services	$	24,954	29,922	+4,968
	(FTE)	(194)	(218)	(+24)
Law Enforcement	$	52,177	56,266	+4,089
Self-Determination Training and Technical Assistance	$	2,187	--	-2,187
	(FTE)	(25)	(--)	(-25)
Consolidated Tribal Government Program	$	35	9,250	+9,215
Self-Governance Grants	$	1,200	--	-1,200
Total	$	134,832	144,351	+9,519
	(FTE)	(389)	(381)	(-8)

Adult Vocational Training (-$772,000; FTE -5): The following changes result from the application of the Indian Priority System at the tribe/agency level.

Area Office	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$1,532,000	$1,494,200	$-37,800
Anadarko Area	693,400	546,300	-147,100
Billings Area	661,000	558,000	-103,000
Juneau Area	2,808,000	2,809,300	+1,300
Minneapolis Area	1,509,000	1,871,200	+362,200
Muskogee Area	940,000	933,200	-6,800
Phoenix Area	2,238,000	1,786,500	-451,500
Sacramento Area	950,500	908,000	-42,500
Albuquerque Area	682,000	514,800	-167,200
Navajo Area	2,714,000	2,581,300	-132,700
Portland Area	2,054,100	2,052,600	-1,500
Eastern Area	864,000	818,600	-45,400
TOTAL TRIBAL PRIORITIES	$17,646,000	$16,874,000	$-772,000
ADJUSTMENTS:			
One additional workday		+8,000	
Adjustment for Administrative and Staffing Efficiencies		-32,000	
FY 1991 Federal Pay Adjustments		+25,000	
P.L. 93-638 Contractor Pay Cost Adjustments		+21,000	
Federal Employees Retirement System (FERS)		+20,000	
FY 1991 REQUEST..................................		$16,916,000	$-722,000

Other Employment Assistance (-$742,000; FTE 0): The following changes result from the application of the Indian Priority System at the tribe/agency level.

Area Office	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$464,200	$454,200	$ -10,000
Anadarko Area	166,200	109,500	-56,700
Billings Area	40,000	---	-40,000
Juneau Area	828,100	674,400	-153,700
Minneapolis Area	502,100	155,100	-347,000
Muskogee Area	162,300	140,100	-22,200
Phoenix Area	334,100	221,600	-112,500
Albuquerque Area	156,200	156,000	-200
Portland Area	192,400	193,400	+1,000
Eastern Area	146,400	145,700	-700
TOTAL TRIBAL PRIORITIES	$2,992,000	$2,250,000	$-742,000
ADJUSTMENTS:			
One additional workday		+2,000	
Adjustment for Administrative and Staffing Efficiencies		-4,000	
FY 1991 Federal Pay Adjustments		+4,000	
P.L. 93-638 Contractor Pay Cost Adjustments		+6,000	
Federal Employees Retirement System (FERS)		+9,000	
FY 1991 REQUEST..................................		$2,267,000	$-742,000

Community Services, General (+$486,000; FTE +4): The following changes result from the application of the Indian Priority System at the tribe/agency level.

Area Office	FY 1990 Enacted	FY 1991 Request	Difference
Billings Area	$56,000	$70,000	$+14,000
Juneau Area	---	292,000	+292,000
Minneapolis Area	20,000	30,000	+10,000
Muskogee Area	397,100	382,500	-14,600
Phoenix Area	---	95,000	+95,000
Albuquerque Area	229,200	204,000	-25,200
Portland Area	176,200	299,700	+123,500
Eastern Area	715,500	706,800	-8,700
TOTAL TRIBAL PRIORITIES	$1,594,000	$2,080,000	$+486,000
ADJUSTMENTS:			
One additional workday		+1,000	
Adjustment for Administrative and Staffing Efficiencies		-1,000	
FY 1991 Federal Pay Adjustments		+1,000	
P.L. 93-638 Contractor Pay Cost Adjustments		+13,000	
Federal Employees Retirement System (FERS)		+14,000	
FY 1991 REQUEST................................		$2,108,000	$+486,000

Community Fire Protection (-$53,000; FTE 0): The decrease of $53,000 includes:

—a decrease of $50,000 for the Penobscot Tribe. The Congressional add-on in FY 1990 was to enable the tribe to purchase a 1,250 gallon Class-A pumper so that their volunteer fire department can fight structural fires. The reservation is within the jurisdiction of the fire department of Old Town, Maine and previously received protection from that fire department. The tribe elected to sever that relationship and establish their own volunteer fire department.

—a net decrease of $3,000 based on the application of the Indian Priority System at the tribe/agency level.

Area Office	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$43,100	$40,400	$ -2,700
Anadarko Area	73,500	69,500	-4,000
Minneapolis Area	136,000	136,000	---
Phoenix Area	231,500	248,900	+17,400
Sacramento Area	188,200	191,100	+2,900
Albuquerque Area	115,000	73,000	-42,000
Portland Area	43,200	33,200	-10,000
Eastern Area	199,500	234,900	+35,400
TOTAL TRIBAL PRIORITIES	$1,030,000	$1,027,000	$ -3,000
CONGRESSIONAL ADD-ONS:			
Penobscot	+50,000		-50,000
Pascua Yaqui	+60,000	+60,000	
FY 1990 ENACTED TO DATE	$1,140,000		
ADJUSTMENTS:			
FY 1991 Federal Pay Adjustments		+1,000	
P.L. 93-638 Contractor Pay Cost Adjustments		+2,000	
Federal Employees Retirement System (FERS)		+5,000	
FY 1991 REQUEST..................................		$1,095,000	$-53,000

Tribal Courts (+$49,000; FTE 0): The increase of $49,000 is the net of:

--an increase of $500,000 for Eastern Oklahoma proposed concurrently with the extension of BIA law enforcement to that area in accordance with court rulings; and

--a net decrease of $451,000 based on the application of the Indian Priority System at the tribe/agency level.

Area Office	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$2,014,900	$ 2,002,600	$-12,300
Anadarko Area	441,400	427,000	-14,400
Billings Area	682,700	602,700	-80,000
Juneau Area	1,000	---	-1,000
Minneapolis Area	1,074,200	1,064,900	-9,300
Muskogee Area	9,000	9,000	---
Phoenix Area	1,907,600	1,746,000	-161,600
Sacramento Area	---	15,000	+15,000
Albuquerque Area	1,003,700	786,500	-217,200
Navajo Area	656,300	656,000	-300
Portland Area	1,284,800	1,324,900	+40,100
Eastern Area	466,400	456,400	-10,000
TOTAL TRIBAL PRIORITIES	$9,542,000	$ 9,091,000	$-451,000
CONGRESSIONAL ADD-ONS:			
Cheyenne River	300,000	300,000	
Sault St. Marie	50,000	50,000	
Penobscot	60,000	60,000	
NW Intertribal Court	200,000	200,000	
Quileute	25,000	25,000	
Pascua Yaqui	150,000	150,000	
Lummi	50,000	50,000	
Quinault	50,000	50,000	
Standing Rock Sioux	50,000	50,000	
St. Regis Mohawk	50,000	50,000	
FY 1990 ENACTED TO DATE	$10,527,000		
ADJUSTMENTS:			
One additional workday		+4,000	
Adjustment for Administrative and Staffing Efficiences		-9,000	
FY 1991 Federal Pay Adjustments		+7,000	
P.L. 93-638 Contractor Pay Cost Adjustments		+69,000	
Federal Employees Retirement System (FERS)		+45,000	
PROGRAM ADJUSTMENTS:			
Eastern Oklahoma Tribal Courts		+500,000	+500,000
FY 1991 REQUEST................................		$10,692,000	$+49,000

Other Aid to Tribal Government (-$4,334,000; FTE -6): The decrease of $4,334,000 includes:

--a decrease of $380,000 for the Navajo Government Reform Task Force which was one time funding to match the tribe's contribution;

--an increase of $62,000 for the Chitimacha Tribe over the amount added by Congress in FY 1990 to conform to the FY 1989 Congressional increase for the tribe; and

--a net decrease of $4,016,000 at the following locations based on the application of the Indian Priority System at the tribe/agency level.

Area Office	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$2,451,300	$948,800	$-1,502,500
Anadarko Area	1,215,800	986,100	-229,700
Billings Area	445,000	480,000	+35,000
Juneau Area	1,992,900	2,121,800	+128,900
Minneapolis Area	925,900	896,600	-29,300
Muskogee Area	3,705,000	1,467,900	-2,237,100
Phoenix Area	2,009,400	1,676,600	-332,800
Sacramento Area	1,998,300	2,450,800	+452,500
Albuquerque Area	1,832,200	1,513,900	-318,300
Navajo Area	382,000	292,000	-90,000
Portland Area	1,752,000	1,821,300	+69,300
Eastern Area	793,200	831,200	+38,000
TOTAL TRIBAL PRIORITIES	$19,503,000	$15,487,000	$-4,016,000
CONGRESSIONAL ADD-ONS:			
Navajo	+380,000		-380,000
Chitimacha	+124,000	+186,000	+ 62,000
FY 1990 ENACTED TO DATE	$20,007,000		
ADJUSTMENTS:			
One additional workday		+15,000	
Adjustment for Administrative and Staffing Efficiencies		-58,000	
FY 1991 Federal Pay Adjustments		+45,000	
P.L. 93-638 Contractor Pay Cost Adjustments		+76,000	
Federal Employees Retirement System (FERS)		+84,000	
FY 1991 REQUEST..................................		$15,835,000	$-4,334,000

Social Services (+$4,968,000; FTE +24): The increase is the net of:

--an increase of $3,500,000 to continue the multi-year incremental effort to staff and operate the emergency shelters and halfway houses;

--an increase of $2,000,000 to continue the multi-year expansion of child protection efforts by increasing staff resources available to the bureau and tribally contracted social services programs to investigate and refer child abuse cases for treatment;

--a net decrease of $532,000 at the following areas based on the application of the Indian Priority System at the tribe/agency level.

Area Office	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$2,664,400	$2,687,600	$+23,200
Anadarko Area	750,200	791,800	+41,600
Billings Area	1,214,000	1,202,400	-11,600
Juneau Area	1,214,000	1,246,700	+32,700
Minneapolis Area	771,400	767,800	-3,600
Muskogee Area	904,100	891,100	-13,000
Phoenix Area	3,941,800	3,497,500	-444,300
Sacramento Area	34,500	34,500	---
Albuquerque Area	1,584,200	1,494,800	-89,400
Navajo Area	3,301,300	3,303,700	+2,400
Portland Area	2,052,100	1,972,600	-79,500
Eastern Area	1,056,000	1,065,500	+9,500
TOTAL TRIBAL PRIORITIES	$19,488,000	$18,956,000	$-532,000
PROGRAM ADJUSTMENTS:			
Staff & operate Emergency Shelters	+1,000,000	+4,500,000	+3,500,000
Expand Child Protection Efforts	+4,000,000	+6,000,000	+2,000,000
FY 1990 ENACTED TO DATE	$24,488,000		
ADJUSTMENTS:			
One additional workday		+22,000	
Adjustment for Administrative and Staffing Efficiencies		-88,000	
FY 1991 Federal Pay Adjustments		+69,000	
P.L. 93-638 Contractor Pay Cost Adjustments		+97,000	
Federal Employees Retirement System (FERS)		+144,000	
Navajo Area Transfer from Area Direct Operations		+222,000	
FY 1991 REQUEST.................................		$29,922,000	$+4,968,000

Law Enforcement (+$4,089,000; FTE 0): The increase of $4,089,000 is the net of:

--an increase of $1,000,000 to extend BIA law enforcement to Eastern Oklahoma in accordance with recent court rulings;

--an increase of $1,500,000 to continue to staff, operate, and equip the juvenile detention facilities for which construction funding was appropriated in FY 1987 and FY 1990;

--an increase of $802,000 for pay and uniforms for Bureau operated law enforcement programs. In FY 1989, new position descriptions and grade structures were approved for uniformed police officers which resulted in the upgrading of police officers and supervisors by at least one grade. Because of the timing, no funding was added to the tribe/agency base for FY 1990 or FY 1991. The bureau has approximately 275 uniformed officers and the grade increase is estimated to be $2,550 which equals a shortfall of $702,000 in salaries. This will comply with proposed legislation pending in Congress (H.R. 498) which requires comparability in pay for BIA law enforcement officers. In addition, H.R. 498 contains a provision for a uniform allowance of up to $400 per year. The estimated cost of this requirement is $100,000.

--an increase of $1,655,000 to continue the FY 1989 Congressional add-on of a general increase for law enforcement. These funds were distributed pro rata to all locations which funded law enforcement programs.

--a net decrease of $868,000 at the following areas based on the application of the Indian Priority System at the tribe/agency level.

(See table on next page)

Area Office	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$ 7,022,600	$ 6,991,100	$ -31,500
Anadarko Area	1,056,000	981,300	-74,700
Billings Area	3,976,800	3,946,400	-30,400
Minneapolis Area	2,584,400	2,615,600	+31,200
Muskogee Area	---	32,000	+32,000
Phoenix Area	10,315,600	10,509,300	+193,700
Sacramento Area	607,000	629,000	+22,000
Albuquerque Area	4,204,000	3,212,400	-991,600
Navajo Area	9,814,400	9,829,000	+14,600
Portland Area	5,254,200	5,234,800	-19,400
Eastern Area	2,174,000	2,160,100	-13,900
TOTAL TRIBAL PRIORITIES	$47,009,000	$46,141,000	$-868,000
CONGRESSIONAL ADD-ONS:			
Quinault	175,000	175,000	
Standing Rock	100,000	100,000	
Sault Ste. Marie	150,000	150,000	
Cheyenne River	300,000	300,000	
Lummi	100,000	100,000	
Rosebud	200,000	200,000	
Tohono O'Odham	250,000	250,000	
St. Regis Mohawk	150,000	150,000	
Miccosukee	100,000	100,000	
Pojoaque Pueblo	95,000	95,000	
Omaha	150,000	150,000	
Lower Elwah	50,000	50,000	
Suquamish	200,000	200,000	
Penobscot	50,000	50,000	
Colorado River Tribes	175,000	175,000	
Ramah Navajo	100,000	100,000	
Uintah and Ouray	50,000	50,000	
San Carlos Apache	100,000	100,000	
ADJUSTMENTS:			
One additional workday		+68,000	
Adjustment for Administrative and Staffing Efficiencies		-299,000	
FY 1991 Federal Pay Adjustments		+233,000	
P.L. 93-638 Contractor Pay Cost Adjustments		+206,000	
Federal Employees Retirement System (FERS)		+965,000	
PROGRAM ADJUSTMENTS:			
Staff & Operate Juvenile Detention Facilities	1,500,000	+3,000,000	+1,500,000
Eastern Oklahoma Law Enforcement		+1,000,000	+1,000,000
Bureau-Operated Law Enforcement Programs		+802,000	+802,000
General Increase		+1,655,000	+1,655,000
FY 1990 ENACTED TO DATE	$51,004,000		
FY 1991 REQUEST..................................		$56,266,000	$+4,089,000

Self-Determination Training and Technical Assistance (-$2,187,000; FTE -25): As a result of the Indian Self-Determination and Education Assistance Act Amendments of 1988, P.L. 100-472, technical assistance grants have superseded funding for this line item. Accordingly, tribes which had funded training and technical assistance moved this funding to other line items during the FY 1991 Indian Priority System planning cycle.

Area Office	FY 1990 Enacted	FY 1991 Request	Difference
Anadarko Area	$ 197,000	--	$ -197,000
Billings Area	35,000	--	-35,000
Juneau Area	688,000	--	-688,000
Minneapolis Area	114,000	--	-114,000
Muskogee Area	105,000	--	-105,000
Phoenix Area	521,000	--	-521,000
Sacramento Area	342,000	--	-342,000
Portland Area	44,000	--	-44,000
Eastern Area	141,000	--	-141,000
TOTAL TRIBAL PRIORITIES	$2,187,000	--	$-2,187,000
FY 1991 REQUEST..................................		--	$-2,187,000

Consolidated Tribal Government Program (CTGP)(+$9,215,000; FTE 0): The initial consolidated tribal government program, established in 1982, was known as the CTGP Prototype Project Plan. The initiative has enabled tribes to conjoin programs that have similar objectives or benefits, and to administer them as a consolidated unit. These programs have been clustered based on compatibility. Tribes have been able to combine existing contracts of a similar or compatible nature under a single consolidated tribal government contract, and to add new programs or services on the same basis. Previously, the CTGP contracts were achieved through reprogramming after the funds were distributed. Since the CTGP Prototype Project has shown the viability of this program, the bureau has established a new line item for it within the Indian Priority System. The entire increase is a result of the application of the Indian Priority System at the tribe/agency level.

Area Office	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	--	$1,609,900	$+1,609,900
Anadarko Area	--	1,401,700	+1,401,700
Muskogee Area	--	2,230,000	+2,230,000
Phoenix Area	--	1,502,500	+1,502,500
Albuquerque Area	--	2,470,900	+2,470,900
TOTAL TRIBAL PRIORITIES	--	$9,215,000	$+9,215,000
ADJUSTMENTS:			
P.L. 93-638 Contractor Pay Cost Adjustments		+35,000	
FY 1991 REQUEST..............................		$9,250,000	$+9,215,000

Self-Governance Grants ($-1,200,000; FTE 0): In FY 1990, Congress added $1,200,000 to continue, based on need, second-year planning funds for the tribes who were part of the second self-governance demonstration grant program and third year grants to the original grant recipients to negotiate Title III Self-Governance Demonstration Projects. The bureau has received progress reports on the grants from participating tribes but has yet to receive an application for a self-governance project. At this time, no further funding is requested.

Object Class Distribution - Tribal Services - Tribe/Agency Operations

	FTE	Amount
Personnel Compensation (FTE)............................	-8	$ +799,000
Personnel Benefits.......................................		+112,000
Other Services...		+8,608,000
Total..........................	-8	$+9,519,000

Justification of Program and Performance

Activity: Navajo-Hopi Settlement Program
Subactivity: Navajo-Hopi Settlement Program

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted to Date	FY 1990 Adjusted Appropr.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Navajo-Hopi Settlement Program	$	1,002	988	1,027	1,027	—
	(FTE)	(47)	(--)	(47)	(47)	(--)
Total Requirements	$	1,002	988	1,027	1,027	--
	(FTE)	(47)	(—)	(47)	(47)	(--)

Impact of Public Law 99-177

	FY 1990 Enacted to Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Navajo-Hopi Settlement Program	1,002	-14	988

The reduction will be accomplished through reduced travel and delays in hiring.

Objective: This program implements the provisions of the Navajo-Hopi Settlement Act of 1974, as amended, which requires the Secretary of the Interior to protect the rights of relocatees, to reduce stock to carrying capacity, and to restore the grazing capacity of rangelands lying within the former Navajo/Hopi Joint Use Area.

Base Program ($1,027,000; FTE 47): The initial stock reduction program of 180,000 sheep units has been completed on both the Navajo and Hopi Partitioned Lands. Almost all of the excess livestock now on Hopi Partitioned Lands (HPL) consists of livestock belonging to Navajo relocatees and trespass animals from outside the HPL. To keep the number of animals within the authorized carrying capacity, herd growth is limited. Trespass action is required on all livestock migrating or driven into the area. Livestock control will continue in FY 1991. As a result of livestock reduction and range restoration of several areas on Hopi Partitioned Lands, the stocking rate has increased 145 percent over the 1973 stocking rate. Range restoration and development were initiated at a later date on Navajo Partitioned Lands (NPL). FY 1991 plans will continue to emphasize range restoration, development of range management units, implementation of grazing permits for all livestock, and continued fencing of the interior management unit boundaries.

The statute required that all relocation activity be completed by July 6, 1986, however, there are still Navajo Indians to be relocated from Hopi land. There are presently no Hopi Indians located on Navajo land. While the FY 1986 appropriation language did not extend the July 6, 1986, deadline to relocate Navajos, there was a stipulation that Navajos living on Hopi land cannot be relocated until new housing is available. Development of water and construction of housing and roads for all potential relocatees is proceeding; however, a completion date for all eligible relocatees is not known at this time. As necessary, grazing permits issued to eligible Navajo relocatees will be extended until all Navajos residing on lands partitioned to the Hopi Tribe are relocated. The rangeland restoration effort for Navajo and Hopi Partitioned Lands is 60 and 90 percent respectively completed.

Restoration of Hopi Partitioned Lands was originally scheduled for completion in FY 1988-89. However, with the delay, in relocation of Navajo families, and restoration of areas formerly occupied by them, the restoration of all lands (NPL and HPL) will not be completed until FY 1991. On NPL, new grazing regulations have been published in the Federal Register, however, they have not been approved by the Navajo Tribe. Approval of these regulations will determine the approach for conducting range restoration on the NPL.

The Navajo Partitioned Land Office in Flagstaff, Arizona, has been closed, and the remaining staff has moved to the Window Rock, Tuba City or the Gallup offices.

Activity Summary

(Dollar amounts in thousands)

Activity: Economic Development Programs

Subactivity:	FY 1989 Actual Approp.	FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc.(+) Dec.(-) From Base
Business Enterprise Development	10,801	10,748	10,602	10,773	10,866	+93
Road Maintenance	30,975	---	---	---	---	---
Tribe/Agency Operations	3,523	3,542	3,494	3,587	3,678	+91
Total	45,299	14,290	14,096	14,360	14,544	+184

Justification of Program and Performance

Activity: Economic Development Programs
Subactivity: Business Enterprise Development
Element: Credit and Financing

(Dollar amounts in thousands)

Program Element		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Credit and Financing	$	2,823	2,785	2,834	2,947	+113
	(FTE)	(33)		(33)	(31)	(-2)
Total Requirements	$	2,823	2,785	2,834	2,947	+113
	(FTE)	(33)		(33)	(31)	(-2)
Distribution:						
Area Office Operations	$	933	920	971	914	-57
	(FTE)	(22)	(--)	(22)	(20)	(-2)
Central Office Operations	$	615	607	587	1,087	+500
	(FTE)	(11)	(--)	(11)	(11)	(--)
Technical Assistance	$	975	962	976	946	-30
Grant to Michigan Tribes	$	300	296	300	---	-300
Total	$	2,823	2,785	2,834	2,947	+113
	(FTE)	(33)	(--)	(33)	(31)	(-2)

Impact of Public Law 99-177	FY 1990 Enacted To Date	Reductions Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Credit and Financing	2,823	-38	2,785

This reduction will be accomplished by deferring hiring, reducing travel to provide assistance to clientele, and reducing the number of technical assistance contracts awarded on behalf of loan and grant clients. The grant to Michigan tribes was reduced by $4,000.

Objective: The credit and financing program assists federally-recognized Indian tribes, Indian organizations, Alaska Natives and individual Indians in developing and using their resources to improve their economies through: (1) direct loans from the Revolving Fund for Loans Program; (2) guaranteed loans from the Loan Guaranty and Insurance Fund Program; (3) grants from the Indian Business Development Program; (4) issuance of guaranteed taxable bonds and supplemental surety bonds; and (5) funds from other government and private sources.

Base Program ($2,834,000; FTE 33): The majority of Indian reservations are economically depressed, resulting in unemployment and lack of business. Indian reservations have not enjoyed the same opportunities for economic development as some of the surrounding communities. Since Indian land is held in trust by the United States Government, Indian tribes cannot mortgage trust land as security for loans. To help alleviate this situation, legislation has been enacted to provide financial assistance to Indian tribes, Indian-owned businesses and corporations, Alaska Natives, and individual Indians. Even though individually-owned trust land may be mortgaged under the provisions of the Act of March 29, 1956, private lenders are hesitant to make loans on reservations because of the lack of state jurisdiction over most reservations, and problems encountered with tribal court systems.

The 1934 Indian Reorganization Act was the earliest legislation enacted for the establishment of a credit system for Indians. It also provided for Indian tribes to be organized as tribal governments and federally-chartered business corporations. The Indian Financing Act (IFA) of 1974 consolidated earlier loan programs established under separate legislation into a single revolving loan fund and established a new loan guaranty and insurance program and grant program for the acquisition, establishment, or expansion of businesses. The 1988 amendments to the IFA authorized a new program allowing the issuance of guaranteed taxable bonds and the guaranteeing of surety bonds, in conjunction with the Small Business Administration (SBA). The SBA will guarantee up to 90 percent of losses sustained by a surety company as a result of the issuance of a bid, and/or performance bond to an Indian small business concern. The bureau will guarantee the remaining portion of the bond for a total guarantee of 100 percent. Other programs authorized by Congress which are used by both tribes and individual Indians are those administered by the SBA, Veterans Administration, Department of Housing and Urban Development, Department of Commerce, Department of Defense, Department of Transportation, and the Farmers Home Administration.

Area Office Operations ($971,000; FTE 22): The area offices, in coordination with the central office, oversee the general operations of the Revolving Fund for Loans, the Loan Guaranty and Insurance Fund, the Indian Business Development Grant Program, and Guaranteed Bond Program. Agency offices make, monitor, and collect the loans and grants under these programs. Where an agency does not have a credit staff, the area office performs the functions of the agency office. Direct loans to tribes and loans to individuals up to $350,000 may be approved at the area office level if funds have been distributed. Guaranteed loans for tribes, corporations, and individuals may be approved at the area office level if a loan guaranty ceiling is available. Area office credit personnel are also responsible for monitoring P.L. 93-638 credit programs which have been contracted at the agency level; providing oversight, guidance, and assistance in policy implementation; and performing program evaluations of those agencies with bureau operated credit programs.

Central Office Operations ($587,000; FTE 11): The central office provides overall policy guidance, coordination, supervision, monitoring, and evaluation of the Revolving Fund for Loans, the Loan Guaranty and Insurance Fund, the Indian Business Development Grant Program, and Guaranteed Bond Program, administered under the IFA, as amended. The central office provides technical assistance to aid Indians in obtaining adequate capital for resource development, and provides program evaluation of field operations and policy information on overall goals of the program. In FY 1990, an office will be established in Albuquerque, New Mexico, to centralize all direct loan and loan guarantee collections, and recording of such payments to the bureau's financial system and credit system. With the enactment of the 1988 amendments to the IFA, regulations are in process to implement a taxable bond and supplemental surety bond guarantee program.

Further information on the operation of programs is contained in other portions of the budget discussing the Revolving Fund for Loans and the Loan Guaranty and Insurance Fund.

Technical Assistance ($976,000; FTE 0): Funds are available under this program to provide assistance to tribes and individuals in developing business ventures under the Indian Financing Act, as amended. The management and technical assistance is furnished to: (1) assist potential and previously approved businesses in assessing their business proposals; (2) finance travel relating to technical assistance to business projects; and (3) procure private sector assistance for businesses previously funded through loans or grants whose operations are in need of such assistance.

Grant to Michigan Tribes ($300,000; FTE 0): In FY 1990, Congress added $300,000 for the Michigan tribes for activities included in the proposal of the American Indian Business Development Consortium with the State of Michigan.

Change from FY 1991 Base: (Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	+/- Difference
Area Office Operations	($)	971	914	-57
	(FTE)	(22)	(20)	(-2)
Central Office Operations	($)	587	1,087	+500
	(FTE)	(11)	(11)	(--)
Technical Assistance	($)	976	946	-30
Grant to Michigan Tribes	($)	300	---	-300
TOTAL	($)	2,834	2,947	+113
	(FTE)	(33)	(31)	(-2)

Area Office Operations (-$57,000; FTE -2): The decrease of $57,000 is a result from the application of the Indian Priority System at the Area level. Changes by area are as follows:

	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$150,000	$169,000	$+19,000
Billings Area	61,000	26,000	-35,000
Juneau Area	113,000	113,000	-0-
Minneapolis Area	90,000	90,000	-0-
Muskogee Area	79,000	103,000	+24,000
Phoenix Area	115,000	115,000	-0-
Sacramento Area	40,000	40,000	-0-
Albuquerque Area	113,000	44,000	-69,000
Navajo Area	49,000	53,000	+4,000
Portland Area	123,000	123,000	-0-
TOTAL AREA PRIORITIES	$933,000	$876,000	$-57,000

(Continued)	FY 1990 Enacted	FY 1991 Request	Difference
ADJUSTMENTS:			
One additional workday		+3,000	
Adjustment for Administrative & Staffing Efficiencies		-12,000	
FY 1991 Federal Pay Adjustments		+9,000	
Federal Employees Retirement System (FERS)		+8,000	
Increase for Muskogee Area Office		+30,000	
FY 1991 REQUEST		$914,000	$-57,000

Central Office Operations (+$500,000; FTE 0): The increase will be used to undertake a portfolio valuation of all direct loans under the Revolving Fund for Loans, and all loans guaranteed under the Loan Guaranty and Insurance Fund. As of the end of FY 1989, loans in these two programs exceed $300 million. These loans will be evaluated by an independent party as to viability, salability, and completeness of bureau review. Loans that have defaulted, or are delinquent, will be reviewed for cause, and recommendations made as to actions that can be taken that may prevent future defaults. A credit management review will also be made, with recommendations as to staffing, contracting of programs, handling of funds, computerization, and other aspects of managing the loan programs.

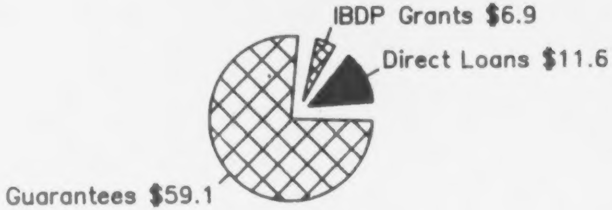
Technical Assistance (-$30,000); FTE 0): In FY 1990 Congress added $30,000 for a feasibility study on potential land transfer involving the Kootenai Tribe and the Forest Service. This one-time add-on will be discontinued in FY 1991.

Grant to Michigan Tribes (-$300,000; FTE 0): In FY 1989 Congress added $425,000 for a one year grant to the Michigan Tribes to fund American Indian Business Development Consortium, Inc. in conjunction with the State of Michigan. In FY 1990 Congress continued funding for this program at a reduced level of $300,000 and added language that this was the final year of funding for this program. The Tribes may apply for grants under the Indian Business Development Program.

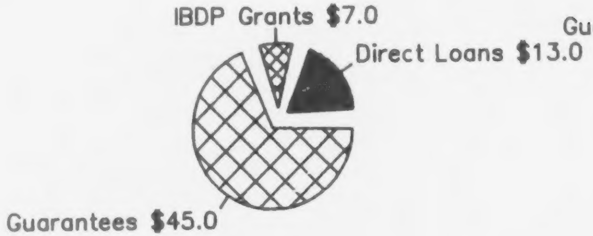
Object Class Distribution - Credit and Financing

	FTE	Amount
Personnel compensation	-2	$ -21,000
Personnel benefits		-2,940
Other services		+436,940
Grants, subsidies, and contributions		-300,000
		$+113,000

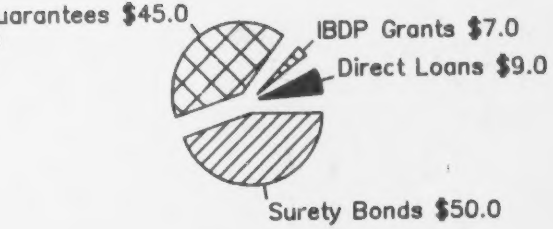
ECONOMIC DEVELOPMENT PROGRAMS
BUSINESS ENTERPRISE DEVELOPMENT
CREDIT AND FINANCING



FY 1989
Actual $77.6 Million



FY 1990
Est. $65.0 Million



FY 1991
Est. $111.0 Million

Justification of Program and Performance

Activity:	Economic Development Programs
Subactivity:	Business Enterprise Development
Element:	Indian Arts and Crafts Board

(Dollar amounts in thousands)

Program Element		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Indian Arts and Crafts Board	$	925	912	939	919	-20
	(FTE)	(16)		(16)	(16)	(--)
Total Requirements	$	925	912	939	919	-20
	(FTE)	(16)		(16)	(16)	(--)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reductions Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Business Enterprise Development	925	-13	912

This reduction will be accomplished by deferral in filling one vacant position within the board's museum program.

Objective: The Indian Arts and Crafts Board was created to promote the development of Native American arts and crafts--the creative work of Indian, Eskimo, and Aleut people--in order to: (1) improve the economic status of Native Americans; (2) ensure the continuing vitality of a valuable American heritage; (3) increase Native American participation and control in the growing Native American fine arts and handicrafts business; (4) enable Native Americans to realize their full potential for employment and income from the demand for their creative work; and (5) assist Native American cultural leaders who are developing an institutional framework to support the preservation and evolution of tribal cultural activities.

Base Program ($939,000; FTE 16): The board's activities are not duplicated in either the federal or the private sector. It is the only federal agency that is consistently and exclusively concerned with the economic benefits of Native American cultural development. The board's policies are determined by its five commissioners, who serve without compensation. A professional staff is employed to carry out board responsibilities. For administrative convenience, funds for board expenses and staff are included in the Bureau of Indian Affairs' budget. The board provides business and personal professional advice, information, fund-raising assistance, and promotion to Native American artists and craftsmen and cultural organizations.

As an integral part of its professional services, the board operates a coordinated system of three regional museums located in reservation areas. These three museums are the Southern Plains Indian Museum, Anadarko, Oklahoma; the Sioux Indian Museum, Rapid City, South Dakota; and the Museum of the Plains Indian, Browning, Montana. The museums are cultural focal points for residents of the area, primary vehicles for the delivery of services, and staging points for regional and national promotions.

Annual sales of Native American arts and handicrafts total several hundred million dollars, but Native American interests currently control only a small portion of this market. To support and expand those interests in FY 1991, the board will promote Native American arts and crafts primarily through:

-over 260 Native-owned and operated craft marketing enterprises

-a consumer directory that is an established marketing link between these Native craft enterprises and the more than 40,000 consumers annually who consult it;

-approximately 20 one-person sales exhibitions in the board's museums, which include an illustrated promotional brochure;

-several group sales exhibitions of outstanding contemporary Native art work presented in the board's museums and at other institutions through cooperative arrangements; and

-concentrated management advice to some 100 developing Native museums.

The board focuses its efforts on those activities that most directly benefit Native American artists and craftsmen; however, it will continue to assist the Institute of American Indian and Alaska Native Culture and Arts Development, the National Endowment for the Arts, the Institute of Museum Services, the U.S. Information Agency, other government agencies, and the general public, who are substantial ancillary beneficiaries of the board's information and museum activities. Annually, the board answers over 10,000 written and telephone inquiries from the public.

Changes from FY 1991 Base: (Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	+/- Difference
Indian Arts and Crafts Board	($)	939	919	-20
	(FTE)	(16)	(16)	(--)
Total	($)	939	919	-20
	(FTE)	(16)	(16)	(--)

Indian Arts and Crafts Board (-$20,000; FTE 0): This amount was provided in FY 1990 as a one-time add-on to enable the Blackfeet Tribe to contract for the operation of the Museum of the Plains Indians, and is not being continued. Substantial progress has not been made in negotiating the contract with the Blackfeet Tribe.

Object Class Distribution - Indian Arts & Craft Board

	Amount
Other services..	$-20,000

Justification of Program and Performance

Activity:	Economic Development Programs
Subactivity:	Business Enterprise Development
Element:	Indian Business Development Grant Program

(Dollar amounts in thousands)

Program Element	FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Indian Business Development Grant Program $	7,000	6,905	7,000	7,000	---

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reductions Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Business Enterprise Development	7,000	-95	6,905

This reduction will be accomplished by making three to four fewer grants to Indian individuals.

Objective: To provide conditional grants to Indian tribes and Indian individuals for the purpose of: (1) initiating business development of tribal resources; (2) encouraging non-Federal investment; (3) promoting sound business principles; (4) reducing tribal dependence on the Federal Government; and (5) promoting private sector development on reservations.

Base Program ($7,000,000; FTE 0): The 1984 Indian Financing Act Amendments reauthorized the original Indian Business Development Program.

The major purposes of the Indian Business Development Program grants have been to: (1) provide equity capital for the establishment or expansion of locally chosen economic enterprises which generate income and employment opportunities for participating tribes and individuals; (2) serve as an inducement, when combined with applicants' financial and other resources, to attract private sector investment capital for the development of viable economic enterprises; and (3) reduce tribal dependence on the Federal Government over the long term through economic development projects which contribute to a stable private sector reservation economy.

As stated previously, the present program is being operated under the authority of the Indian Financing Act of 1974, as amended. The 1984 Amendments raised the maximum grant levels from $50,000 for any applicant to $100,000 for individuals and $250,000 for tribes. Grants may be used to cover up to 25 percent of the cost of the economic enterprise, providing the applicant can obtain the necessary financing for the balance from other sources (excluding funds from the Bureau's direct loan and guaranteed loan programs).

The role of Indian tribes in this program activity is: (1) to decide whether to seek development of their tribal resources and to determine the nature of the economic development suitable for their individual reservations; (2) to provide the basic services of local government; and (3) to foster an atmosphere of governmental stability that promotes confidence and attracts private sector capital.

Individual Indians receiving grants are expected to create a positive influence on the economy of the reservation in terms of jobs created or sustained, outside financing invested, and turnover of funds within the Indian community. Credit and financing personnel handle the day-to-day oversight responsibility for approved grants. Agency credit officers are responsible for initial grant application review, with guidance, support and assistance provided by area credit offices. Agency superintendents monitor the program. Area office credit personnel administer and monitor individual projects in their respective areas. Area directors are authorized to approve all grants. Fund control and reporting at the central office level is administered through the Division of Financial Assistance in the Office of Trust and Economic Development.

Workload Data:	FY 1989 Grants (Actual)	FY 1990 Grants (Estimate)	FY 1991 Grants (Estimate)
Number of applications received.	307	350	350
Amount requested................	$13,435,095	$14,000,000	$14,000,000
Total project amounts...........	$62,318,240	$75,000,000	$75,000,000
Number of applications funded...	188	225	225
Total amount awarded............	$ 6,907,159	$ 7,000,000	$ 7,000,000
Total project amounts...........	$37,399,168	$45,000,000	$45,000,000

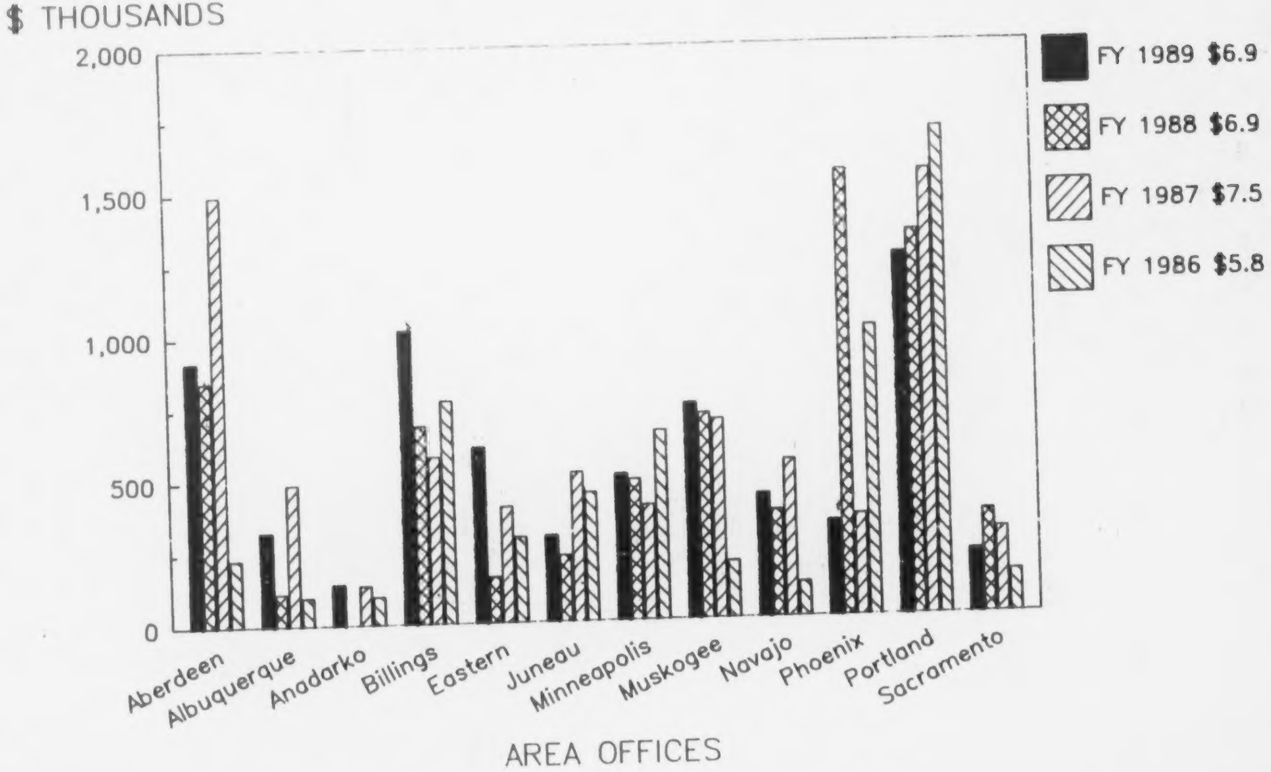
In FY 1991 the bureau anticipates the following activities:

	Number of:		Average	
	Applications Received	Grants Awarded	$ Amount	Total
Tribal	50	30	$110,000	$3,300,000
Individual	300	195	19,000	3,700,000
TOTAL	350	225		$7,000,000

Based on the amount of private sector financing attracted by present projects, the bureau anticipates that the $7.0 million program should result in an additional $30-35 million in private capital investment in Indian economies.

INDIAN BUSINESS DEVELOPMENT PROGRAM GRANTS

FY 1986 THROUGH FY 1989



Justification of Program and Performance

Activity: Economic Development Programs
Subactivity: Business Enterprise Development
Element: Tribe/Agency Operations

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Credit and Financing	$	3,542	3,494	3,587	3,678	+91
	(FTE)	(59)		(59)	(54)	(-5)
Total Requirements	$	3,542	3,494	3,542	3,678	+91
	(FTE)	(59)		(59)	(54)	(-5)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reductions Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Business Enterprise Development	3,542	-48	3,494

This reduction will be accomplished by deferring hiring.

Credit and Financing

Base Program ($3,587,000; FTE: 59): Credit personnel at the agencies assist federally-recognized Indian tribes, Indian organizations, Alaska Natives and individual Indians with developing and utilizing resources to improve the economies. The programs available are: (1) direct loans from the Revolving Fund for Loans; (2) guaranteed loans from the Loan Guaranty and Insurance Fund; (3) grants from the Indian Business Development Program; and (4) assistance in obtaining financing from other governmental and private sources.

The base program includes support for salaries, travel, and operational expenses for bureau employees who monitor and collect the loans made under the direct loan program and the guaranteed loan program, and who administer the grant program. Available funds also cover the operating costs of credit programs which are operated by tribes under contract with the bureau.

Most loans and grants are not approved at the agency level. The area office has the authority to approve all loans and grants based on a ceiling allocated to that area, and in some cases has delegated to the superintendent some, or all, of the authority on a discretionary basis. However, the agency credit officer is responsible for reviewing all loan and grant applications, assisting the client in correct application preparation where necessary, and making recommendations to the superintendent on whether the proposal should be approved.

It is the agency credit officer's responsibility to review the accounting records maintained by tribes or other Indian organizations covering activities financed by the United States Government, or with tribal funds used under Secretarial regulations. This is done in order to observe and report on adherence to accepted business practices and procedures, sound credit policies and practices, and regulations.

In addition to responsibilities for loans and grants made by the bureau, the credit officer assists tribes and individual Indians in obtaining loans from banks

and other private sector financial lending sources and works with other federal funding sources in developing economic enterprises on Indian reservations. These federal sources include the Small Business Administration, Veterans Administration, Housing and Urban Development, Economic Development Administration, Department of Defense, Department of Transportation, and Farmers Home Administration.

Workload Data:

	($ in millions) FY 1989
BIA - direct loans - outstanding	$106.5
BIA - direct loans - new	11.6
Guaranteed and Insured loans - outstanding	218.7
Guaranteed and Insured loans - new	59.1
Indian Business Development grants - new	7.0

Changes from FY 1991 Base: (Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	+/- Difference
Credit and Financing	($)	3,587	3,678	+91
	(FTE)	(59)	(54)	(-5)
Total	($)	3,587	3,678	+91
	(FTE)	(59)	(54)	(-5)

Credit and Financing (+$91,000; FTE -5): The changes result from the application of the Indian Priority System at the tribe/agency level. Changes by area are as follows:

	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$487,000	$463,200	$-23,800
Anadarko Area	183,000	128,400	-54,600
Billings Area	383,000	446,900	+63,900
Juneau Area	372,000	373,000	+1,000
Minneapolis Area	203,000	224,400	+21,400
Muskogee Area	352,000	335,000	-17,000
Phoenix Area	406,000	375,000	-31,000
Albuquerque Area	103,000	207,500	+104,500
Navajo Area	156,000	167,000	+11,000
Portland Area	508,000	487,100	-20,900
Eastern Area	389,000	425,500	+36,500
TOTAL TRIBAL PRIORITIES	$3,542,000	$3,633,000	$+91,000
ADJUSTMENTS			
One additional workday		+8,000	
Adjustment for Administrative & Staffing Efficiencies		-32,000	
FY 1991 Federal Pay Adjustments		+25,000	
P.L. 93-638 Contractor Pay Cost Adjustments		+10,000	
Federal Employees Retirement System (FERS)		+34,000	
FY 1991 REQUEST		$3,678,000	$+91,000

Object Class Distribution - Tribe/Agency Operations

	FTE	Amount
Personnel Compensation	-5	$+76,000
Personnel Benefits		+10,640
Other Services		+4,360
Total	-5	$+91,000

Activity Summary

(Dollar amounts in thousands)

Activity: 3800 - Natural Resources

SUBACTIVITY	FY 1989 Actual Approp.	FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Incr. (+) Decr. (-) From Base
Natural Resources, General	2,267	2,818	2,779	2,827	3,159	+332
Agriculture	5,886	12,185 b/	12,019	11,870	11,770	-100
Forestry	70,866 a/	12,903	12,727	13,471	15,207	+1,736
Water Resources	10,067	10,107	9,971	10,145	7,693	-2,452
Wildlife and Parks	26,731	27,858	27,482	27,968	23,482	-4,486
Minerals and Mining	15,572	5,386 b/	5,313	5,314	4,557	-757
Tribe/Agency	50,307	54,462	53,723	55,195	53,963	-1,232
TOTAL	181,696	125,719	124,014	126,790	119,831	-6,959

a/ Includes $58,594 for Fire Suppression which is funded in the Bureau of Land Management beginning in FY 1990.

b/ Irrigation O & M was transferred from Minerals and Mining to Agriculture in FY 1990.

Justification of Program and Performance

Activity: Natural Resources Development
Subactivity: Natural Resources, General

(Dollar amounts in thousands)

Program Element		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
A. Program Management	$	847	835	856	1,188	+332
	(FTE)	(13)		(13)	(17)	(+4)
B. Indian Integrated Resources Information Program	$	1,971	1,944	1,971	1,971	--
Total Requirement	$	2,818	2,779	2,827	3,159	+332
	(FTE)	(13)		(13)	(17)	(+4)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Natural Resources, General	2,818	-39	2,779

The impact of this action will be an overall reduction in travel, supplies, and office equipment and a reduction in total data base development. In terms of production, 20 less 1:24,000 quadrangle equivalents will be digitized for basic theme data during the fiscal year.

Objective: This program provides direction and support in the planning and management of the 53 million acres of Indian renewable natural resources under jurisdiction of the Bureau of Indian Affairs where operations crosscut multi-resource disciplines to inventory, manage, protect and develop those resources through a systems approach by using remote sensing, spatial data analysis and automated cartography.

A. Program Management

		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Area Office Operations	$	727	717	737	826	+89
	(FTE)	(9)		(9)	(11)	(+2)
Central Office Operations	$	120	118	119	362	+243
	(FTE)	(4)	—	(4)	(6)	(+2)
Total	$	847	835	856	1,188	+332
	(FTE)	(13)		(13)	(17)	(+4)

Base Program ($856,000; FTE 13):

Area Office Operations ($737,000; FTE 9): This program provides oversight, supervision, direction and support to the program areas of Wildlife and Parks, Water Resources, Agriculture, Range, Irrigation and Forestry for the planning and management of the renewable natural resources. This includes the coordination of these program functions and information systems with local governments and with other federal, state, tribal and private organizations in the application of spatial data technology and automated cartography to the natural resource and transportation program areas.

Workload Data: For area office operations, results of actions supported by funding from Natural Resources, General, are included under the specific subactivity, i.e., Agriculture, Forestry, Water Resources, Wildlife and Parks or Irrigation.

Workload includes assistance in establishing bureau policy, regulations, and procedures; budget formulation and implementation; providing advice and counsel to agency offices and tribes; monitoring and conducting program evaluations; supporting, directing and overseeing administrative matters affecting natural resource programs; and coordination and implementation of information systems technology.

Central Office Operations ($119,000; FTE 4): This program develops policy and provides oversight and technical support to the national Indian Integrated Resources Information Program (IIRIP). This includes the management of the technical support center responsible for the implementation of the information systems and the remote sensing technology within the bureau which are vital components of the Integrated Resources Management Planning interface.

B. Indian Integrated Resources Information Program (IIRIP)

Base Program ($1,971,000; FTE 0): The Bureau of Indian Affairs is responsible for the multiple use management of the natural resources on 53 million acres of trust lands. An integral feature of this responsibility includes planning for the development, management and protection of the resources associated with these lands. Water, lands, wildlife, fisheries, agriculture, forests, range and energy minerals are typical of the resources which must be managed. Using advanced spatial data management technologies, the Office of Trust and Economic Development is moving to streamline and improve its management of the aforementioned resources on behalf of Indians. State-of-the-art computer technology is utilized to conduct complex management analysis and planning of resources by incorporating the geographic data which characterizes these resources into digital data bases. The Indian Integrated Resources Information Program (IIRIP) utilizes advanced and highly technical information systems, automated cartography and remote sensing technologies to refine and enhance its resource management capabilities. In short, IIRIP provides for the design, development, implementation, and continuing technical support of advanced, digital spatial data management technologies in BIA.

Funding for this program is directed into several critical categories:
(1) development of digital data bases on all reservations; (2) acquisition and implementation of GIS hardware and software which provides the analytical medium for the program; (3) development and implementation of training programs which are essential to program success; and (4) provision of GIS coordination and technical support services for the utilization of the technology.

These four categories support the area and agency offices, as well as tribal organizations. Efforts to date have resulted in the creation and utilization of data bases for 135 reservations, and over 165 data layers (themes) have been incorporated. A typical data base consists of 9 basic themes plus several other resource specific themes. At Fort Apache Agency for example, themes may be primarily oriented toward forest and wildlife applications, while Fort Peck Agency would have a range and energy development orientation. These data are utilized on a regular basis for integrated resource management and planning.

The increasing complexity and demands which characterize today's resource management planning mandate the incorporation of highly responsive and accurate systems. The spatial data systems approach adopted by BIA combines the sophistication of information systems, automated cartography, and remote sensing technologies into an integrated resource data management and analysis program. This systematic approach to natural resource management of trust lands results in benefits to Indians, such as improved management of natural resources which potentially results in increased income and employment.

Current uses of the program include: forest management, fisheries management, range management, irrigation, wildfire management, total reservation planning, nationwide transportation road atlas updating, road planning and maintenance, support of water negotiations, wildlife habitat mapping, forest clearcutting, resource conflict resolution, automated real estate appraisals, automated storage and updating of real estate plat drawings, and support for the BIA emergency response system. All offices have begun to incorporate this program into their operations. Numerous issues can be addressed within the context of IIRIP. Examples include, but are not limited to:

1) Mapping of Grizzly Bear range and habitat on the Blackfeet Indian Reservation:

2) The development of integrated resource management plans for the Isleta and Acoma Pueblo, Fort Belknap, Yakima, Warm Springs, San Carlos, Fort Apache and other reservations.

3) The development of a long term forest development and management plan for the Colville Indian Reservation:

4) A long term forest development plan for the Lac du Flambeau Indian Reservation;

5) Pre-suppression planning for reservations under the jurisdiction of the Albuquerque Area Office;

6) Timber harvest planning for the Yakima Indian Reservation; and

7) Mapping of actual versus proposed land use on the Crow Indian Reservation.

Remotely sensed data are used to support, update and expand the program data base. Pertinent applications include habitat typing for wildlife management, insect infestation, change detection, general land cover mapping, orthophoto image generation, mapping and monitoring of surface disturbance associated with mineral exploration and development, fire fuels mapping, and many others.

IIRIP supports range management, woodland inventory, and mapping of resources potential. The variety and accessibility of services that this program can provide to all resource programs of the bureau impact on improving trustee management to the benefit of all bureau offices and all tribes.

In addition to its own advanced and highly capable program staff, the bureau currently cooperates with other government organizations to accomplish: 1) GIS and remote sensing activities with FWS, USGS, and BLM: 2) onsite support services: 3) contracting; and 4) participation with other DOI agencies and committees to assure a unified and standardized system as a mechanism for data transfer. The program provides bureauwide assistance in the protection and management of Indian natural resources and encourages greater opportunity for tribes to develop their reservation economies.

Workload Data: The IIRIP provides bureau and tribal resources managers with accurate and timely information on the extent, distribution and quality of natural resources to use in making realistic and effective resource management decisions. The program provides a working tool on a day-to-day basis for coordination of land productivity, capability, and ecological status and can be used to solve a single resource management problem or to develop a total reservation plan. It provides a data base common to all resource managers, allowing them to integrate a variety of data from different sources. GIS is a cost effective and accurate manner of accomplishing Integrated Resource Management Plans (IRMPs).

Change from 1991 Base:

(Dollar amounts in thousands)

Program Element		FY 1991 Base	FY 1991 Estimate	+/- Difference
Area Office Operations	$	737	826	+89
	FTE	(9)	(11)	(+2)
Central Office Operations	$	119	362	+243
	FTE	(4)	(6)	(+2)
Total	$	856	1,188	+332
	FTE	(13)	(17)	(+4)

Area Office Operations (+89,000; FTE +2): This increase is the result of priorities established at the following area offices:

Area Office	FY 1990 Enacted	FY 1991 Request	+/- Difference
Aberdeen Area	$20,000	$33,000	$+13,000
Anadarko Area	40,000	40,000	--
Billings Area	83,000	83,000	--
Juneau Area	75,000	--	-75,000
Minneapolis Area	40,000	40,000	--
Phoenix Area	164,000	145,000	-19,000
Sacramento Area	120,000	120,000	--
Albuquerque Area	40,000	110,000	+70,000
Navajo Area	105,000	205,000	+100,000
Portland Area	40,000	40,000	--
TOTAL AREA PRIORITIES	$727,000	$816,000	$ +89,000
ADJUSTMENTS:			
One additional workday		+1,000	
FY 1991 Federal Pay Adjustments		+4,000	
Federal Employees Retirement System (FERS)		+5,000	
FY 1991 REQUEST		$826,000	$ +89,000

Central Office Operations (+243,000; FTE +2): Of the increase, $100,000 will be used to establish a cooperative education program to attract and motivate Native American students to pursue a curriculum leading to a Bachelor of Science degree in natural resources and attract college students to the Federal service. This program will provide a course of study during the school year at Haskell Indian Junior College and Southwestern Indian Polytechnic Institute (SIPI) and work experience during the summer at agency offices. Upon completion of the two-year curriculum, the students can take advantage of matriculation agreements with four-year colleges to complete their Bachelor of Science degrees in the natural resource field. These funds will be used to provide for tuition expenses of approximately 15 students, special education classes in natural resources, instructors for workshops and symposia to advise students on career paths, options and alternatives in the field of natural resources.

In addition, $143,000 will be used to support the management staff who administer and direct the bureau-wide activities of agriculture, range, wildlife and parks, water resources and irrigation program areas. These positions were previously funded from the central office water resources and agriculture programs, but this alignment of funding and staffing more accurately reflects the roles and responsibilities of these positions and places them in the subactivity.

Object Class Distribution - Natural Resources, General Subactivity

	FTE	Amount
Total Personnel Compensation.	+4	$ +121,000
Personnel Benefits.		+17,000
Other Services.		+125,000
Supplies and Materials.		+69,000
Total..................................	+4	$ +332,000

Justification of Program and Performance

Activity: Natural Resources Development
Subactivity: Agriculture

(Dollar amounts in thousands)

Program Element		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
A. Program Management	$	1,523	1,502	1,186	1,032	-154
	(FTE)	(35)		(35)	(22)	(-13)
B. Prairie Dog Control Program	$	500	493	500	1,000	+500
C. Noxious Weed Eradication	$	730	720	730	2,000	+1,270
D. Special Agriculture Programs	$	1,716	1,693	1,716	--	-1,716
E. Irrigation, Operations and Maintenance	$	7,716	7,611	7,738	7,738	--
	(FTE)	(18)		(18)	(18)	(--)
Total Requirements	$	12,185	12,019	11,870	11,770	-100
	(FTE)	(53)		(53)	(40)	(-13)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Agriculture	12,185	-166	12,019

The sequestration will diminish program oversight and evaluation for all programs in the Agriculture sub-activity, and will reduce the number of acres of noxious weed and prairie dogs which will be controlled by 400 and 600 acres, respectively.

Objective: The Agriculture program's objectives are to protect, conserve, restore, improve and enhance the agronomic and range resource values of Indian lands; to preserve the land in a perpetually productive state to ensure continuous production; to develop the renewable resources to provide Indian self-sufficiency; to regulate water runoff and minimize soil erosion; to preserve and develop other values, such as wildlife and recreation; to provide technical assistance to Indian farmers and ranchers; to assist Indian landowners in leasing their farmland and rangeland for the maximum economic return, consistent with the objectives of sustained yield management and conservation of the resource; and to financially assist Indian water users, through supplementing water user collections, in order to conserve water and to properly operate and maintain the irrigation water delivery systems on 71 Indian irrigation projects in a safe, economical, beneficial and equitable manner.

Base Program ($11,870,000; FTE 53): The agriculture and range program provides technical assistance to encourage and motivate increased use of agricultural resources by Indians and to bring about improved management activities incorporating tribal goals and objectives. Multiple-use, integrated resource planning and technical assistance are designed to: inventory and protect the renewable natural resources against erosion and soil deterioration; restore eroded and depleted areas; stabilize runoff and minimize sediment on land areas; improve cover with adapted crop species on farmland, forest, pasture and rangeland; retain water for farm and ranch use; and provide operation and maintenance of 71 Indian irrigation projects. These activities will be accomplished through the reduction of the inventory backlog and the implementation of current state-of-the-art and management techniques designed to interpret and determine potential for present and future use of the resources. Within the bureau, management of agronomic and range resources is decentralized, with professional staff located at 11 area offices and 76 agency offices in 26 states providing technical assistance to 303 Indian reservations encompassing over 46 million acres. In many cases, agriculture and range personnel also provide technical assistance, support and resources to develop and implement the wildlife and parks program on the reservations. They initiate environmental reviews for trust lands, except forested land, and review environmental assessments completed by other agencies.

A. Program Management

(Dollar amounts in thousands)

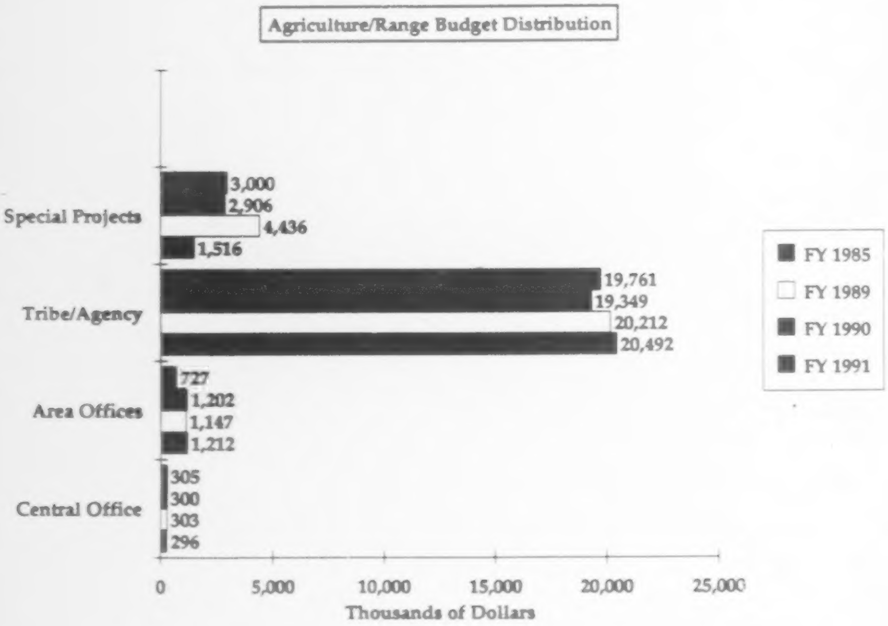
Program Element		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Area Office Operations	$	1,219	1,202	881	727	-154
	(FTE)	(29)		(29)	(16)	(-13)
Central Office Operations	$	304	300	305	305	--
	(FTE)	(6)		(6)	(6)	(--)
Total	$	1,523	1,502	1,186	1,032	-154
	(FTE)	(35)		(35)	(22)	(-13)

Area Office Operations ($881,000; FTE 29): The area offices are responsible for implementing bureau policy and procedures, monitoring and conducting evaluations of the agency agriculture, range and hazardous waste programs. The program staff provides assistance and advice to the area director and agency superintendents on matters relating to planning, management, conservation, development and utilization of Indian soil, water and rangeland resources; administers pesticide, herbicide, animal damage control and hazardous waste programs on Indian lands; and directs the flood plains management program. Technical assistance is provided for establishing and monitoring P.L. 93-638 grants and contracts.

Central Office Operations ($305,000; FTE 6): The central office provides staff assistance and advice to the Deputy to the Assistant Secretary-Indian Affairs (Trust & Economic Development) on matters relating to establishment of program standards, policy and procedures for the bureauwide agriculture and range programs which include agriculture, range, soil and moisture conservation, hazardous waste and the application of pesticides. This staff develops procedures and policy in the development and utilization of the trusts' soil, water, and rangeland resources based upon national tribal goals and objectives; provides direction of the bureau's flood plains management program; and administrative assistance to the bureau's pesticide, herbicide and animal damage control program on Indian lands. The staff maintains liaison and close working relations with other federal agencies, area offices and agency officials on matters affecting Indian renewable natural resources; performs the budget planning and development responsibilities for these activities; and provides assistance to area office staff in carrying out the oversight and program review functions for the Assistant Secretary - Indian Affairs.

The central office also provides technical assistance and coordination to the Inter-Tribal Agriculture Council, disseminates information to tribes on agriculture related matters through the issuance of information bulletins, and coordinates and administers the Agriculture Student Cooperative Program in conjunction with the Haskell Indian Junior College and the Southwestern Indian Polytechnical Institute.

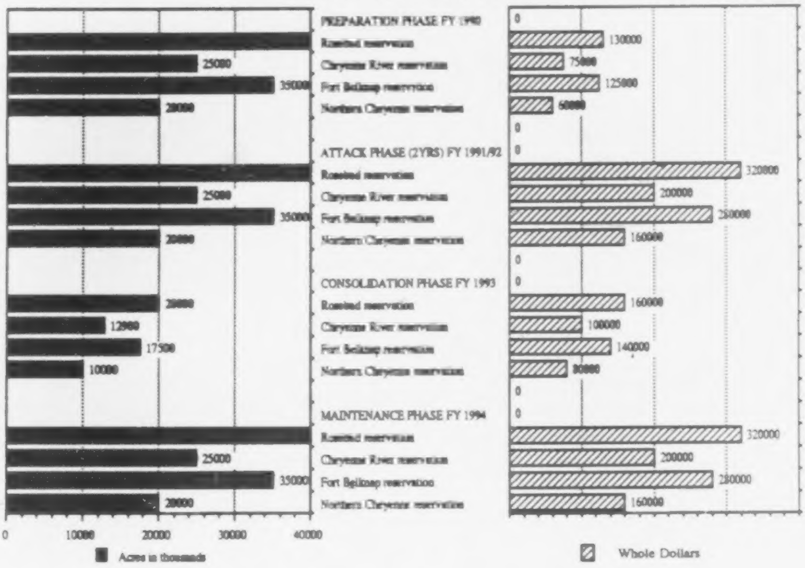
The FY 1991 budget also includes $19,761,000 for Agriculture programs in Tribe/Agency Operations. The table below compares funding for Areas, Central Office, and Tribe/Agency and special projects which include noxious weeks, Prairie Dogs, and tribal specific appropriations.



B. Prairie Dog Control Program

Base Program ($500,000; FTE 0): A new five year plan for the prairie dog control program has been developed in cooperation with the Aberdeen and Billings Area Offices for fiscal years 1990 through 1994. This five year program will cover two reservations in the Aberdeen Area (Rosebud and Cheyenne River) and two in the Billings Area (Fort Belknap and Northern Cheyenne). The total number of acres infested with prairie dogs on these reservations is approximately 120,000. The total cost of treatment over the five year period would be approximately $4,000,000. The following chart provides detailing of the five year program.

PRAIRIE DOG CONTROL PROGRAM
FIVE - YEAR PLAN



The elements of the prairie dog control program are described below:

(1) Preparation Phase (FY 1990): This phase involves carrying out a reconnaissance survey of infested areas, mapping prairie dog towns, determining the priority control areas, delineating the zone structure, training field personnel, preparing an action plan for each year, and each zone, and carrying out the consultation with U.S. Fish and Wildlife Service the required under Section 7 of the Endangered Species Act. This will require each Agency to perform a blackfooted ferret survey to assure protection of the ferret habitat as an endangered species. Inter-border coordination with neighboring jurisdictions and private land owners and leasees will also be carried out during this phase.

(2) Attack Phase (FY's 1991 and 1992): This phase will involve fall treatment with Zinc Phosphide baited oats during the driest period of the season and Aluminum Phosphide for mop-up in the spring season. This two-year treatment on a total coverage basis is targeted to control 95% of the infestation on the four reservations.

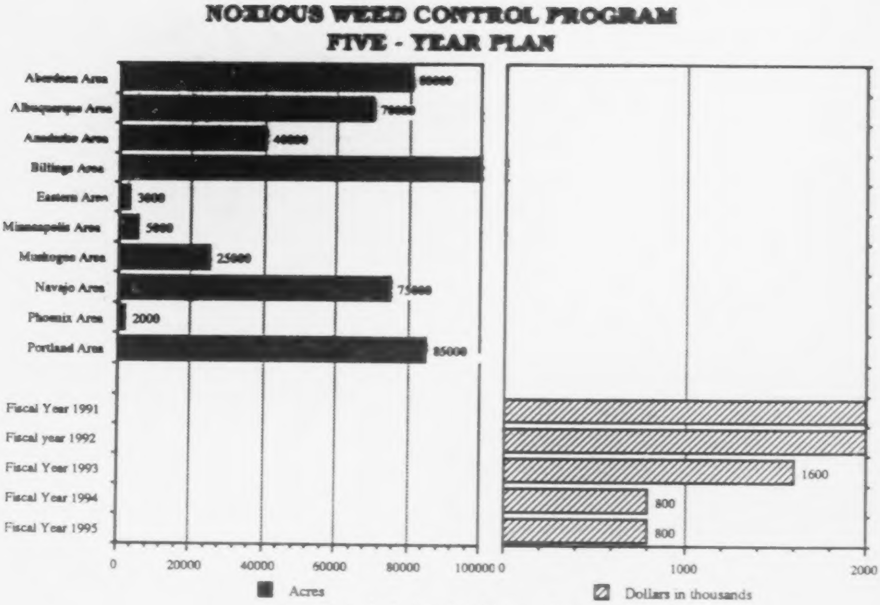
(3) Consolidation Phase (FY 1993): Similar treatment as in the attack phase but at reduced acreage level will be required to control the remaining pockets of prairie dogs and those that have invaded the reservation from neighboring dog towns. Cooperative control efforts will also be established with jurisdictions across the border area by effective barriers.

(4) Maintenance Phase (FY 1994): This is the range restoration and rehabilitation phase, during which fencing and water resource dugouts and wells are constructed to distribute livestock throughout the leaseable range units in accordance with the carrying capacity of reservation grazing land. This phase may be extended as part of the regular operation and maintenance program of the reservation, once the major range units are restored.

The FY 1990 preparation phase is being implemented on the four reservations at a cost of $500,000. An action plan for each reservation program will be submitted to initiate the five-year plan. Subsequent fiscal year funding will be required to assure continuation of the five-year control work. The Aberdeen and Billings Area Offices will oversee the implementation of the plan and assist the Agencies and tribes in coordinating prairie dog control work with other Federal and State agencies and private landowners.

C. Noxious Weed Eradication

Base Program ($730,000; FTE 0): These funds will be used to manage and control noxious weeds on selected Indian reservations. An appropriate management strategy to control noxious weeds will be developed through a survey of the most serious noxious weed infestations; identification of troublesome weed species; and determination of priority range units to be treated. Major focus will be placed on areas actually in production (ranch and farm operations) and land suitable for future leasing including irrigable land, to return these parcels to productivity after noxious weeds are controlled. Chemical, mechanical, cultural and biological control methods will be used. Funds will be distributed to areas and agencies with existing noxious weed control programs who have secured cost-sharing with other jurisdictions and non-Indian entities within and outside the Indian reservations. This funding will allow the control of approximately 30,000 acres based on a cost-shared funding of $25 per acre.



NOXIOUS WEED CONTROL PROGRAM
FIVE - YEAR PLAN

D. Special Agriculture Programs

Base Program ($1,716,000; FTE 0):

Gila River Farms ($1,411,000; FTE 0): The proposed plan for the development of the Gila River Farms-Sacaton Ranch project includes the establishment and maintenance of new crops as part of the crop diversification program. The funds appropriated in FY 1990 will be used by the Gila River Indian Community to establish specialized crops, such as citrus and grapes, to diversify the cropping patterns which will enable the Farms to generate revenue and reduce their dependency on crops supported through the Department of Agriculture crop deficiency program.

Nez Perce ($55,000; FTE 0): The soil fertility project on the Nez Perce Indian Reservation includes the collection of base line soil fertility data; an evaluation of the quantity and quality of limestone resources on the reservation for possible commercial development of agriculture lime; and an investigation of the need for lime application on reservation farm lands to improve crop yields and reduce the soil erodability.

Intertribal Agriculture Council ($250,000 FTE 0): The Intertribal Agriculture Council provides a forum for Native American and Alaskan Natives to exchange ideas and share information on the management, protection and development of agriculture, range and water resources; promotes and recommends changes in Federal and tribal policies to encourage self-determination and self-sufficiency through improved management opportunities by local governments; encourages training and development in agriculture and natural resource disciplines; assists in the exploration of agricultural marketing opportunities; and disseminates information to member entities concerning legislation and Federal policies affecting Native American and Alaska Native agriculture and natural resources. These funds will be used by the Intertribal Agriculture Council to publish a quarterly newsletter for dissemination to all members; provide information on proposed legislation affecting agriculture and water resources; provide information on upcoming activities; and sponsor an annual symposium for member groups and Federal agencies to exchange information.

E. Irrigation Operation and Maintenance

Base Program ($7,738,000; FTE 18): The Irrigation O & M program provides funds to pay the operation and maintenance assessment for those Indians who are financially unable to pay their assessments and where the United States is required to provide these services at no cost to the Indian users. There are approximately 61 irrigation systems designated for this program, ranging in size from tracts of a few acres such as subsistence garden tracts to major projects of over 50,000 acres. Paying these assessments assures operation and maintenance service for all users, Indians and non-Indians alike, who have paid their assessments. Non-Indian users of the Indian irrigation systems pay the full assessment in advance, as do Indians who are able to pay the full assessment. Irrigation O & M funds are essential to maintain the delivery system for all users, to avoid costly crop failures for Indians and non-Indians, and to minimize and/or avoid unnecessary major rehabilitation costs to the government. The bureau plans to undertake a review of its irrigation system program during FY 1990.

All collections from water users are deposited in the operation and maintenance receipt account and are available for operating and maintaining the respective projects pursuant to the provisions of the Act of August 7, 1946 (60 Stat. 895). Collections from Indian water users for prior year assessments which have previously been paid from reimbursable appropriated funds are deposited directly into the Treasury, as Miscellaneous Receipts, for repayment of reimbursable indebtedness.

Indian irrigation systems and projects fall into the following categories:

1) Projects where the repayment capabilities of the land will permit landowners and water users as a whole to pay the full annual cost of the operation and maintenance of the system. The lands have characteristics to produce crops under sustained irrigation. Assessment rates on these projects are fixed to return the full operation and maintenance costs. Any unpaid assessment becomes a lien against the land for which the assessment is paid.

No funds are requested for payment of assessments under this category.

2) Projects where the repayment capabilities of the land will not permit payment of the full annual operation and maintenance costs. Assessment rates for Indian water users on these projects are based on the ability of the Indian user to pay and do not cover the full cost of operation and maintenance. All or any part of any unpaid assessment becomes a lien against the land for which such assessment is not paid.

Funds requested for payment of costs under this category will be used when necessary to pay into the Collection Account that part of the annual operation and maintenance cost on Indian-owned lands in excess of the annual assessment and any part of the uncollectable annual per acre assessment against Indian owned lands. Funds so paid into the Collection Account to cover these costs become reimbursable debts due the U.S. when used to pay all or any part of the annual costs included in the assessment rate. Costs in excess of the assessment rate are non-reimbursable.

(3) Irrigated areas, such as subsistence garden tracts and tracts of a few acres which do not represent economical units, but provide Indian landowners with a means of supplementing their livelihood. Because of the low income of the Indian landowners and water users on these irrigated areas and tracts, it is not feasible from an economic standpoint to assess these lands. Accordingly, the operation and maintenance costs are non-reimbursable and do not become a lien against the lands benefitted.

Funds requested for payment of costs under this category will be used, when necessary, to pay into the Collection Account the total cost for operation and maintenance of these subsistence garden tracts and irrigated areas. If no Collection Account has been established, and it is not desirable or proper to establish such an account, the funds will be expended, when necessary, directly from the appropriation account.

(4) Irrigation systems and reservoirs serving Indian-owned lands located within and operated by various private and public irrigation districts and water user associations. Assessments for operation and maintenance of the irrigation systems and reservoirs serving these Indian-owned lands are made by the irrigation district or water users association serving such Indian owned lands.

Funds requested for payment of assessments under this category will be used, when necessary, to pay into the Collection Account for payment to private and public irrigation districts and water users associations for operation and maintenance costs assessed for Indian-owned lands included within such irrigation districts and water users associations. Funds used for payment of assessments covering these costs are reimbursable and become debts due the U.S., except for those payments that are nonreimbursable by legislation.

(5) Projects that are operated by the bureau at no cost to the Indian landowners and water users, as provided for under legislation or court decree. Funds requested for payment of assessments under this category will be used, when necessary, to pay into the Collection Account.

Following is a summary of irrigation project acreage and estimated value of crops grown. Data for the 1988 crop year is the latest available.

Land Ownership in Projects	Acreage	Gross Crop Value ($ Millions)
Indian Owned Land	996,766	$ 256.05
Indian Farmed	472,425	90.85
Non-Indian Farmed	385,508	165.20
Idle	138,833	-0-
Non-Indian Owned/Farmed	149,000	62.30
Grand Total	1,145,766	$ 318.35

The 71 Indian irrigation projects are distributed throughout the west as follows:

BIA Area Office	No. of Projects
Albuquerque	23
Billings	6
Navajo	1
Phoenix	29
Portland	7
Sacramento	5
Total	71

The Appropriations Act for FY 1984, P.L. 98-146, authorized the Secretary of the Interior to invest irrigation and power operation and maintenance collections. The initial investments were made on November 10, 1983. For the period September 30, 1988 through September 30, 1989, the total interest earned from the investments was $4,900,000. The irrigation portion was $2,000,000 and the power portion was $2,900,000. The interest earnings are having a very small impact in terms of O & M requirements on a project-by-project basis. On March 31 and September 30 of each year, the interest earnings are apportioned to each participating project in direct proportion to the amount of investment by each project.

The estimated distribution of funds by category for FY 1990 and FY 1991 is as follows:

(Dollar amounts in thousands)

Category	No. of Projects	Estimate FY 1990	Estimate FY 1991
1)	9	$ -0-	$ -0-
2)	8	310	310
3)	43	925	925
4)	5	317	317
5)	5	2,950	2,950
NIIP)	1	3,214	3,214
Total	71	$7,716	$7,716

Change from FY 1991 Base:

(Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Request	+/- Difference
Program Management: Area Office Operations	$	881	727	-154
	FTE	(29)	(16)	(-13)
Prairie Dog Control Program	$	500	1,000	+500
Noxious Weed Eradication	$	730	2,000	+1,270
Special Agriculture Programs	$	1,716	--	-1,716
Total	$	3,827	3,727	-100
	FTE	(29)	(16)	(-13)

Area Office Operations (-$154,000; FTE -13): This decrease is the result of priorities established at the following area offices:

Area Office	FY 1990 Enacted	FY 1991 Request	+/- Difference
Aberdeen Area	$231,000	$187,000	$-44,000
Minneapolis Area	33,000	33,000	--
Muskogee Area	71,000	79,000	+8,000
Phoenix Area	101,000	111,000	+10,000
Navajo Area	659,000	531,000	-128,000
Portland Area	124,000	124,000	--
TOTAL TRIBAL PRIORITIES	$1,219,000	$1,065,000	$-154,000
ADJUSTMENTS:			
One additional workday		+3,000	
Adjustment for Administrative and Staffing Efficiencies		-16,000	
FY 1991 Federal Pay Adjustments		+13,000	
Federal Employees Retirement System (FERS)		+28,000	
Navajo Area Transfer to Tribe/Agency		-366,000	
FY 1991 REQUEST...................................		$727,000	$-154,000

Prairie Dog Control (+$500,000; FTE 0): The increase will enable the bureau to intensify prairie dog control measures by implementing a total coverage fall treatment with zinc phosphide bait followed by a spring treatment with phostoxin as a mop-up for 120,000 acres. It will also allow additional range rehabilitation and restoration measures such as cattle water dug-outs, fencing and dams in accordance with the Five-Year Plan of Operation to increase the carrying capacity of rangeland in the four reservations of Fort Belknap, Northern Cheyenne, Rosebud and Cheyenne River. Total acres to be restored would be approximately 100,000.

Noxious Weed Eradication (+$1,270,000; FTE 0): The increase will enable the bureau to launch the Five-Year Noxious Weeds Management Plan. The objective of this plan is to control and manage 50% of the identified weeds within fiscal years 1991 and 1992 with a total treatment of approximately 120,000 acres. A total of 750,000 acres are targetted for control during the five-year program. This increase will assist the bureau in organizing the logistics of the first year of the attack phase and implementing the five-year plan in cooperation with the tribes concerned, private land owners, land users, and local county, state and federal jurisdictions. A noxious weed coordination meeting of tribal and BIA weed coordinators will be held early in FY 1990 to establish the top priority infested areas to be controlled in FY 1991. The priority on rangeland will be those units on which the carrying capacity has been reduced as a result of invasion of noxious or troublesome weeds.

Special Agriculture Programs (-$1,716,000;FTE 0):

Gila River Farms ($-1,411,000): Gila River Farms has received Congressional add-ons of $650,000 in FY 1988, $1,710,000 in FY 1989 and $1,411,000 in FY 1990. The

Bureau feels this is sufficient Federal support for a project which was to have become profitable in 1989 and has not requested funding for the project.

Nez Perce Soil Fertility (-$55,000): The Congressional add-on for this project in FY 1990 was the third and final year of funding to evaluate the change in soil erodability and the effects on crop yield, and further funding is not required.

Intertribal Agriculture Council (-$250,000): The Council should be funded by dues from individual members and groups who receive services from the Council.

Object Class Distribution - Natural Resources, General Subactivity

	FTE	Amount
Total Personnel Compensation.	-13	$ -298,000
Personnel Benefits.		-42,000
Other Services.		+240,000
Total.	-13	$ -100,000

Justification of Program and Performance

Activity: Natural Resources Development
Subactivity: Forestry

(Dollar amounts in thousands)

Program Element		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
A. Program Management	$	2,639	2,603	2,692	2,588	-104
	(FTE)	(60)		(60)	(54)	(-6)
B. Forest Development	$	8,161	8,050	8,172	10,212	+2,040
	(FTE)	(87)		(87)	(110)	(+23)
C. Forest Products Marketing Assistance	$	338	333	338	338	--
	(FTE)	(6)		(6)	(6)	(--)
D. Forest Management Inventories and Plans	$	1,200	1,184	1,204	1,504	+300
	(FTE)	(10)		(10)	(10)	(--)
E. Woodland Management	$	500	493	500	--	-500
	(FTE)	(6)		(6)	--	(-6)
F. Aviation Management	$	65	64	65	65	--
	(FTE)	(1)		(1)	(1)	(--)
G. Menominee Forestry	$	--	--	500	500	--
	(FTE)	(--)		(--)	(--)	(--)
Total Requirements	$	12,903	12,727	13,471	15,207	+1,736
	(FTE)	(170)		(170)	(181)	(+11)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Forestry	12,903	-176	12,727

This reduction will be spread to all the program segments listed above, with the result that fewer forest development backlog acres will receive treatments, not as many forest segments will be inventoried, fewer forest plans will be completed, fewer aviation safety inspections will be completed, and less marketing assistance will be provided.

Objective: The principal objective of the forestry program is to maintain, protect, enhance and develop Indian forest resources through the application of sound forest management principles. State-of-the-art forest management practices are applied to the forest resource to produce, in perpetuity, economic forest products, employment opportunities, and other values deriving from the forest estate for the use and benefit of the Indian owners.

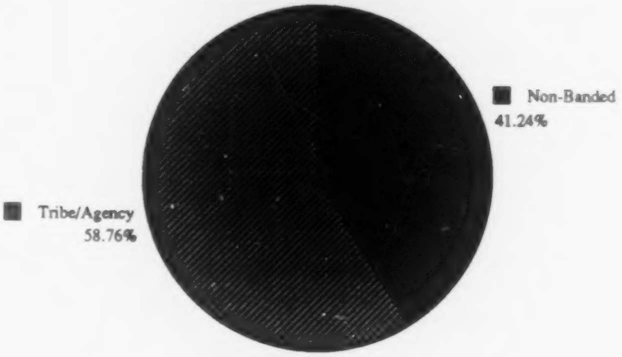
Total Forestry Program: The total FY 1991 request for the forestry program is $36,873,000 which includes $21,666,000 in Tribe/Agency Operations based on tribal priorities established in the Indian Priority System (IPS) plus $15,207,000 in this portion of the budget. There is an inter-relationship among these forestry program activities, and workload cannot be precisely delineated. The following table and charts depict the total appropriated Forestry Program. Refer to the Tribe/Agency - Natural Resources section of the budget for narrative detail on the IPS forestry budget.

In addition to appropriated funds, up to 10% of the gross timber sale receipts are deposited in a special account at the agency level and are available for tribal forestry activities. These funds amount to $5-7 million per year.

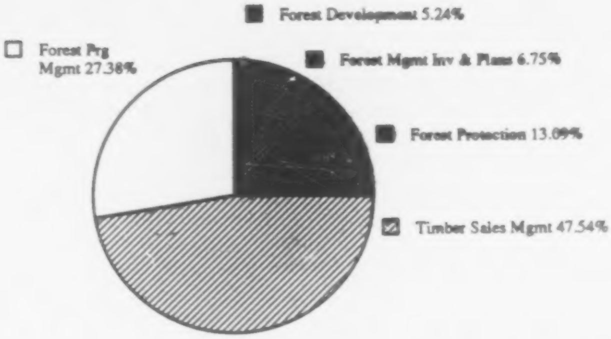
Total Forestry Program

	FY 1991 Request	
	Tribe/Agency	Non-Banded
Area Office Operations	$	$ 1,111,000
Central Office Operations		1,477,000
Forest Development	1,135,000	10,212,000
Forest Management Inventories & Planning	1,462,000	1,504,000
Forest Protection	2,836,000	
Forest Products Marketing Assistance		338,000
Timber Sales Management	10,301,000	
Forest Program Management	5,932,000	
Aviation Management		65,000
Menominee Forestry Program		500,000
Total Forestry	$21,666,000	$15,207,000

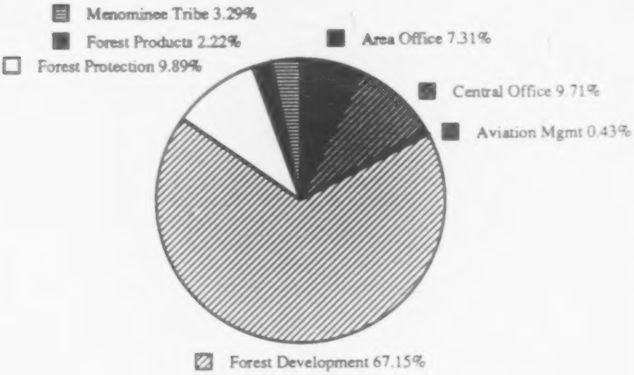
FORESTRY BUDGET
FY 1990 BUDGET



FY 1990 TIMBER/AGENCY



FY 1990 NON-BANDED



A. Program Management

(Dollar amounts in thousands)

		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Area Office Operations	$	1,167	1,151	1,215	1,111	-104
	(FTE)	(39)		(39)	(33)	(-6)
Central Office Operations	$	1,472	1,452	1,477	1,477	--
	(FTE)	(21)		(21)	(21)	(--)
Total	$	2,639	2,603	2,692	2,588	-104
	(FTE)	(60)		(60)	(54)	(-6)

Base Program ($2,692,000; FTE 60):

Area Office Operations ($1,215,000; FTE 39): Execution of the forestry program involves: (1) the planning and scheduling of areawide forestry activities, and (2) the exercise of program oversight to ensure that regulatory and policy requirements are followed and that technical standards of sound forest management are upheld. In carrying out the technical and administrative activities of the forestry program, active working relationships are maintained with other governmental and private organizations concerned with forestry problems of mutual interest.

Technical functions include the formulation and implementation of policies for the activities of appraisal and sale of timber, preparation and revision of multi-use management plans for the forest land base, forest inventories and subsequent analysis of inventory data, forest improvement projects and forest protection.

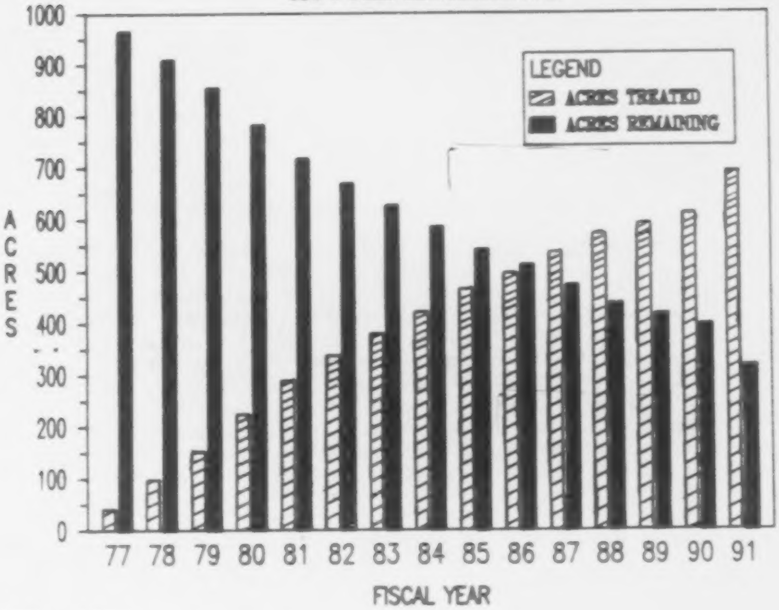
Central Office Operations ($1,477,000; FTE 21): The function and role of the forestry program is to protect and develop the forest resources of Indian trust property. The central office provides program administration for the bureau's forestry operations through the review and development of procedures and manual directives. Delegations of authority are kept current, legislation is prepared and reports on legislation are drafted to facilitate management of Indian forest resources. Staff assistance is provided in preparing budget justifications and backup information for Congressional appropriations and other hearings.

In carrying out the technical and administrative activities of the forestry program, active working relationships are maintained with other governmental and private organizations concerned with forestry problems of mutual interest. These funds include support for the Forester Intern Program, oversight and management of the bureau's aviation program, and forest and range fire protection and suppression efforts.

B. Forest Development

Base Program ($8,172,000; FTE 87): This special forest development program continues the initiative begun in FY 1977 to eliminate the backlog of commercial forest acres requiring silvicultural treatment(s) to bring them up to full productive capacity. Projects are principally reforestation and timber stand improvement. Through intensive forest development practices, allowable annual cuts may be increased, and improved forest products presented for sale, bringing higher profits to the individual Indian and tribal forest landowners.

FOREST DEVELOPMENT ACCOMPLISHMENTS



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C. Forest Products Marketing Assistance

Base Program ($338,000; FTE 6): Prior to FY 1988, the bureau's assistance in marketing of forest products was limited to inventory and appraisal for local markets. To help Indian tribes expand their market for forest products, the bureau began to provide marketing assistance by establishing marketing positions, and by contracting with tribal organizations and private industry. Expanded markets are expected to produce greater profits and more employment for timber tribes. In addition, the expanded market and forest products business development will enhance the reservation economies through increased revenues and expanded employment opportunity.

D. Forest Management Inventories and Plans

Base Program ($1,204,000; FTE 10): The Forest Management Inventories and Plans (FMI&P) program includes all the activities necessary to compile and maintain modern forest management plans for trust forested reservations or properties having a commercial forest land base. Funds are expended on FMI&P projects in accordance with the 12-year schedule (FY 1984-1995) established in the December 31, 1983, "Report on Status of Inventories and Needs Assessment." That report, and subsequent periodic revisions, includes a schedule for completion of forest inventory and planning segments which, when combined with social, economic and other considerations of the Indian owners, provides the framework for developing the reservation forest management plan. As of September 30, 1988, approximately 40 of the 87 forested reservations or properties have current forest management or operating plans. This equates to approximately 64 percent of the total commercial forest land base of 5,592,409 acres having plans. The remaining locations continue to operate with outdated plans. These numbers will vary from year to year as new inventories refine commercial forest acreage, and the status of management planning on a reservation changes because of the need to periodically update and/or revise existing plans.

E. Woodland Management

Base Program ($500,000; FTE 6): The Woodland Management Program has been established to bring the woodland resources under formal forest management practices, thereby assuring sustained and continuous woodlands resources and uses. New Forestry positions will be established, principally in the western United States. This program establishes active forest management on commercial woodlands acres. The programs' first objectives are: 1) to establish a permanent woodlands resources inventory; 2) to incorporate woodlands resources data into reservation Integrated Resource Management Plans, as appropriate; and 3) to increase economic returns to the Indian landowners from their woodland resource.

F. Aviation Management

Base Program ($65,000; FTE 1): The Bureau of Indian Affairs annually spends over $2,500,000 for aviation activities. Almost all of these expenditures can be attributed to Emergency Fire Suppression activities. Responsibility for oversight and program direction was assigned to the forestry program which has also borne the total cost of the program. Because of the expanding use of aircraft services, the Department's increased emphasis on air safety, and the annual reporting requirement to the General Services Administration, a distinct Aviation Management Program became necessary.

G. Menominee Forestry

Base Program ($+500,000; FTE 0): The Menominee Tribe of Wisconsin practices and promotes the sustained yield principle for their forest. Through the continued endorsement of this principle, the Tribe has promoted the development of the finest contiguous blocks of high quality hardwoods and pine in the Lake States. The Menominee forest, consisting of over 220,000 acres, has become the mainstay for the Tribe. Income from their forest virtually supports all community services. The Menominee Tribe's trust relationship with the Federal Government was terminated in 1961 and restored in 1973. Along with restoration, Congress acknowledged that the Menominee Tribe did not need or desire daily federal supervision and provided for maximum self-determination by authorizing a Trust and Management Agreement between the Secretary of the Interior and the Menominee Tribe. Along with the restored trust relationship came funding restoration. (Funding in this portion of the budget is supplemented by funding in the Tribe/Agency section of the budget).

Total Forestry Program Workload Summary:

	Unit	Actual FY 1989	Estimate FY 1990	Estimate FY 1991
Forest Development:				
-Reforestation	Acres	11,727	10,000	12,000
-Timber Stand Improvement	Acres	30,871	30,000	38,000
Forest Protection:				
-Forest & Range Land Protected	Acres	60,873,000	60,873,000	60,873,000
-Number of Fires Suppressed	CY	3,163	3,000	3,000
-Acreage burned		199,235	100,000	100,000
Timber Sale Management:				
-Allowable Annual Cut	MBM	1,005,700	1,005,700	1,005,700
-Volume of Timber Harvested	MBM	757,000	850,000	850,000
-Value of Timber Harvested	$	82,026,000	85,000,000	85,000,000
Forest Management Inventories & Plans:		1/	2/	2/
-Aerial Photography	# of Reserv.	1	15	10
-Mapping	# of Reserv.	4	15	6
-Field Inventory	# of Reserv.	1	11	8
-Inventory Analysis	# of Reserv.	3	9	13
-Management Plan	# of Reserv.	3	15	12
Forest Program Management:				
-Program Reviews		10	25	25
-Quality Control Reviews		5	4	4
-Site Visits		29	50	50

1/ SOURCE: Status of Forest Management Inventories and Planning, 9/30/89.
2/ SOURCE: Status of Forest Management Inventories and Planning, 9/30/88.

The 1988 survey of Annual Economic Benefits Derived from Indian Forest Resources showed that the BIA forestry program generated direct or indirect employment of 14,747 and income of $395.7 million.

Change from 1991 Base:

(Dollar amounts in thousands)

Program Element		FY 1991 Base	FY 1991 Estimate	+/- Difference
Program Management Area Office Operations	$ FTE	1,215 (39)	1,111 (33)	-104 (-6)
Forest Development	$ FTE	8,172 (87)	10,212 (110)	+2,040 (+23)
Forest Management Inventories & Plans	$	1,204	1,504	+300
Woodland Management	$ FTE	500 (6)	-- --	-500 (-6)
Total	$ FTE	11,091 (132)	12,827 (143)	+1,736 (+11)

Area Office Operations (-$104,000; FTE -6): The decrease is the result of priorities established at the following area offices:

Area Office	FY 1990 Enacted	FY 1991 Request	Difference
Billings Area	$ 35,000	$ 35,000	$ --
Juneau Area	173,000	173,000	--
Minneapolis Area	242,000	242,000	--
Phoenix Area	182,000	182,000	--
Sacramento Area	120,000	120,000	--
Albuquerque Area	104,000	--	-104,000
Navajo Area	146,000	146,000	--
Portland Area	105,000	105,000	--
Eastern Area	60,000	60,000	--
TOTAL AREA PRIORITIES	$1,167,000	$1,063,000	$-104,000
ADJUSTMENTS:			
One additional workday		+3,000	
Adjustment for Administrative and Staffing Efficiencies		-21,000	
FY 1991 Federal Pay Adjustment		+16,000	
Federal Employees Retirement System (FERS)		+50,000	
FY 1991 REQUEST		$1,111,000	$-104,000

Forest Development (+$2,040,000; FTE +23): Congress enacted the Special Forest Development program in 1977 to eliminate the backlog of reforestation and thinning work on Indian forest lands identified at that time as requiring silvicultural treatment to bring the lands to full productive capacity. Funds have been provided each year for this purpose, but the following factors have prevented total elimination of the backlog: (1) higher project unit costs, (2) higher energy costs, (3) increased labor costs, and (4) the remoteness of remaining project sites. Over 50% of the backlog acres had been treated by the end of FY 1989, and the backlog was down to approximately 500,000 acres. Because forests are constantly changing in character and structure, silvicultural treatments must be applied periodically to maintain the forest at its full productive capacity and to maintain optimum forest growth rates.

The increased funding will hasten the completion of the backlog treatments and also allow the bureau to initiate secondary treatment of the originally treated acres.

Forest Management Inventories and Plans (+$300,000; FTE 0): Over the past several years, a substantial acreage has been added to the trust forest land base through restoration by Congress or purchase by tribes. The additional funds will be used to install forest inventories and develop forest management plans for these new lands and those lands already in the base that are scheduled for forest management inventory and planning updates.

Woodland Management (-$500,000; FTE -6): The Congress, through the efforts of the Intertribal Timber Council, appropriated a one time add-on of $500,000 to implement a forest Woodlands Management Program in the Phoenix, Albuquerque, Aberdeen and Navajo areas. The bureau has implemented efforts to evaluate woodland and marketing development projects for use of resources from tribally-owned commercial woodlands and no additional funding is requested at this time.

Object Class Distribution - Forestry Subactivity

	FTE	Amount
Total Personnel Compensation............................	+11	$+467,000
Personnel Benefits..		+65,000
Other Services..	--	+1,204,000
Total..	+11	$+1,736,000

Justification of Program and Performance

Activity: Natural Resources Development

Subactivity: Water Resources

(Dollar amounts in thousands)

		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
A. Program Management	$	469	463	482	430	-52
	(FTE)	(8)		(8)	(6)	(-2)
B. Water Management, Planning and Pre-Development	$	9,238	9,113	9,263	6,863	-2,400
	(FTE)	(5)		(5)	(5)	(--)
C. Irrigation Drainage	$	400	395	400	400	--
Total Requirements	$	10,107	9,971	10,145	7,693	-2,452
	(FTE)	(13)		(13)	(11)	(-2)

Impact of Public Law 99-177

		FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Water Resources	$	10,107	-136	9,971

This reduction will be accomplished by reducing program management operating costs such as travel, supplies, and office equipment; the reductions for water resources and irrigation drainage projects and studies will not compromise the ability to perform these tasks, but will be absorbed through reduced travel and related project expenditures.

Objectives: The objectives of this program are to: (1) assist tribes in management, planning and pre-development of their water resources in a manner consistent with sound economic and conservation principles; (2) assist tribes in developing and sustaining an administrative environment which assures that tribal water resource programs are conducted in a manner consistent with applicable laws, regulations, court decisions, and negotiated settlements of water rights claims; and (3) increase tribal training opportunities and involvement in all aspects of water resource management to achieve full tribal capability in these matters.

A. Program Management

Base Program ($482,000; FTE 8):

Central Office Operations ($482,000; FTE 8): The central office provides the bureau, the department, and tribes with analyses and evaluations of water resources management, planning and pre-development proposals which are addressed by court actions, legislation, and regulations affecting tribal water rights and uses. The central office formulates and implements policy initiatives, recommends funding allocations, develops reporting systems, conducts program evaluations of area office operations, maintains liaison and coordination with other federal agencies, and proposes regulations and procedures for program operations including contracts and grants.

B. Water Management, Planning and Pre-Development

Base Program ($9,263,000; FTE 5): The program supports tribal water resources management, planning and pre-development activities within the scope of the President's Plan for Review of Indian Water Rights Claims, August 1980, which will be updated during FY 1990.

Water Resources Management funding will enable the bureau to support tribal water offices. Applications for these funds will be reviewed by bureau program officials who will verify that the applications meet the following criteria for funding: (1) the applicant tribe must have passed a resolution calling for the development of a comprehensive water resources plan; and (2) the plan to be developed must be consistent with the intent of the 10-year plan.

Continued support for established tribal water offices will be re-evaluated at the end of each fiscal year as to progress made on water resources management activities by the tribal staff, and scheduled activities for the coming fiscal year. In addition, a determination will be made as to when recipient tribes should be able to sustain tribal water offices with income derived from reservation natural resources development. The term of program funding for a tribal water office will not exceed three years.

The development of funding criteria and institution of annual evaluations is believed to be essential to assure that program resources will continue to be used in an effective manner for meaningful purposes. In addition, evaluations will constitute oversight which will enable assessment of progress made under the 10-Year Plan.

Water Resources Planning will enable tribes to achieve comprehensive water resources planning under the 10-Year Plan. Ten categories of study are to be addressed: soils/vegetation; water supply; hydrology; domestic, municipal, industrial uses; livestock uses; wildlife uses; instream flow; other water uses including recreation; cultural and religious significance of water resources; and history of water use on the reservation. Applications for study projects will be reviewed by bureau program personnel and prioritized for funding, provided; (1) that the applicant tribe has passed a resolution calling for the development of a comprehensive water resources plan; and 2) that the comprehensive water resources plan to be developed is consistent with the intent of the 10-Year Plan. Program funds will not be used to support studies for the negotiation or litigation of Indian water rights in the absence of direct tribal water resources management benefits, since such study projects are to be funded from the Rights Protection, Water Rights Negotiation/Litigation portion of the bureau's budget. Therefore, planning studies supported by this program will be at the appraisal level.

Water Resources Pre-Development will enable the bureau to fund tribal water resources pre-development studies, including engineering and economics, as well as the upgrading of requisite Water Resources Planning studies to the feasibility level. In the context of this program, "pre-development" means tribal projects which are focused on the production of design specifications and benefit/cost analysis for water storage and distribution facilities. As such, development projects do not involve expenditures for actual construction of storage and distribution facilities. Indian irrigation project delivery system design and analysis are funded from the Irrigation and Power portion of the bureau's budget.

On-farm irrigation design and analysis are funded from the Agriculture portion of the bureau's budget. Pre-development activities with respect to domestic, municipal, and rural water systems will be referred to the Indian Health Service, the Department of Health and Human Services or the Department of Housing and Urban Development. Applications for pre-development study projects will be considered for funding, provided the following criteria are met:

(1) the applicant tribe must have passed a resolution calling for the development of a comprehensive water resources plan;

(2) the plan to be developed is consistent with the intent of the 10-Year Plan;

(3) the specific water development to be studied is consistent with current tribal comprehensive water resources planning; and

(4) requisite supporting Water Resources Planning studies must have been completed at the appraisal level.

Bureau program personnel will prioritize accepted applications using the following criteria:

(1) anticipated economic benefits of development are likely to exceed both costs for construction and operation and maintenance costs over a reasonable period of time;

(2) anticipated economic benefits of development are likely to be equal to both costs for construction and operation and maintenance costs over a reasonable period of time;

(3) anticipated subsistence/income supplementary benefits of development will be realized; and/or

(4) anticipated religious, cultural, habitat, aesthetic, or other benefits will be realized.

C. Irrigation Drainage

Objectives: The Irrigation Drainage program is a special scientific research program which identifies, evaluates and responds to water contamination problems related to irrigation drainage on western Indian reservations where irrigated farming has occurred for many years. Program activities are scheduled under the auspices of the Department of the Interior's Irrigation Drainage Study Team, pursuant to a Memorandum of Understanding between the Assistant Secretary Indian Affairs and the Assistant Secretary - Water and Science.

Base Program ($400,000; FTE 0): These funds represent the bureau's contribution to the Department-wide budget for the Irrigation Drainage Program. The balance of the budget for the program is provided by the Geological Survey, Fish and Wildlife Service, and the Bureau of Reclamation. Study teams comprised of scientists from the contributing agencies are addressing irrigation drainage-related water quality problems in the vicinity of irrigation projects constructed or managed by the Department of the Interior. Study teams have or are addressing potential problems in the following areas that affect Indian reservations:

Area	Reservations Affected	Fiscal Years of Study
Lower Colorado/ Gila River, AZ	Chemehuevi; Colorado River; Fort Yuma; Gila Bend; Gila River	1986-1987
Salton Sea, CA	Torres; Martinez	1986-1991
Tulare Lake, CA	Santa Rosa Rancheria; Tule River	1986-1990
Upper Sacramento, CA	Cortina Rancheria, Colusa Rancheria	1988-1989
Pine River, CO	Southern Ute	1989-1990
American Falls, ID	Fort Hall	1988-1989
Milk River, MT	Fort Belknap	1988-1989
Stillwater, NV	Fallon	1986-1991
Angostura, SD	Pine Ridge	1989-1990
Middle Green, UT	Uintah and Ouray	1986-1991
Riverton, WY	Wind River	1988-1989

In FY 1990, the following reconnaissance studies will be initiated:

Navajo, Fruitland, Hammond, Hogback, NM	Navajo	1990-1991
Dolores, Ute Mountain, CO	Ute Mountain	1990-1991
Humboldt, NV	Fallon	1990-1991

The program involves the following elements:

1) Site identification - identifies sites requiring investigation under the scope of the management strategy;

2) Reconnaissance investigations - determines from existing information and filed screening studies, whether irrigation drainage has caused or has the potential to cause harmful effects on human health, fish, wildlife, or their water uses;

3) Detailed studies - conducts intensive studies to determine the extent, magnitude, impacts, and causes of contamination problems if existing information and screening studies indicate a high potential for harmful effects;

4) Planning - develops a coordinated plan of action with appropriate federal, state, and local agencies to address identified problems; and

5) Remediation - implements corrective actions after plans have been developed and remediation authorized for those areas and activities in which the Department of the Interior has authority and resources.

Changes from FY 1991 Base:

(Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Request	+/- Difference
Program Management: Central Office	$	482	430	-52
	(FTE)	(8)	(6)	(-2)
Water Management, Planning and Pre-Development	$	9,263	6,863	-2,400
Total	$	9,745	7,293	-2,452
	(FTE)	(8)	(6)	(-2)

Program Management ($-52,000; FTE -2): This decrease is the result of transferring funding and staffing in the central office so that management and coordination of all water and land resources (except Forestry) are centralized in Natural Resources, General.

Water Management, Planning and Pre-Development ($-2,400,000; FTE 0): The FY 1990 Congressional funding for ongoing tribal water operations of three tribes (Flathead, Miccosukee and Seminole) in Tribe/Agency Operations is continued in the FY 1991 request. Therefore, the $900,000 which would have been funded by this program will be covered by the IPS program in FY 1991.

An additional $1.5 million in tribal water operation costs are expected to be met from direct funding from other federal agencies to tribes for water resources management, planning and pre-development activities, such as tribal rural water system planning costs by the Bureau of Reclamation, tribal water management grants from the Administration for Native Americans, and water quality management and planning grants from the Environmental Protection Agency. Such direct funding reduces the projected need for this program by another $1.5 million.

Object Class Distribution - Water Resources

	FTE		Amount
Total Personnel Compensation..	-2	$	-41,000
Personnel Benefits..			-6,000
Other Services..			-2,405,000
Total..	-2	$	-2,452,000

Justification of Program and Performance

Activity: Natural Resources Development
Subactivity: Wildlife and Parks

(Dollar amounts in thousands)

Program Element		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
A. Program Management	$	549	542	563	563	—
	(FTE)	(7)		(7)	(7)	(--)
B. Unresolved Hunting and Fishing Rights	$	150	148	150	50	-100
C. Rights Protection Implementation Programs	$	18,722	18,469	19,184	15,491	-3,693
D. Fish Hatchery Operations	$	4,013	3,959	4,213	3,920	-293
	(FTE)	(18)		(18)	(18)	(--)
E. Fish Hatchery Maintenance	$	200	197	200	—	-200
F. Formerly Fish and Wildlife Service Technical Assistance	$	236	233	237	237	--
G. Tribal Management/ Development Programs	$	3,988	3,934	3,421	3,221	-200
Total Requirements	$	27,858	27,482	27,968	23,482	-4,486
	(FTE)	(25)		(25)	(25)	(--)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Wildlife and Parks	27,858	-376	27,482

The reductions will impact program implementation, review, and oversight for all programs in the Wildlife and Parks subactivity. Area contracting officers administering 638 contracts have reduced all contracts by 1.4%, and the individual tribes will decide which program components would be affected. The reductions could delay the procurement of essential supplies and equipment resulting in lower production levels and decreasing tribal employment.

Objectives: Wildlife and Parks funds are used to fulfill and execute the Federal Government's trust and rights protection responsibilities relating to fish, wildlife and recreational resources that are important to the sustenance, cultural enrichment and economic support of Indians, and to promote the conservation, development and utilization of these resources for the maximum benefit of Indians, now, and in the future. This goal is addressed by focusing program resources in three primary areas:

- Protection against the loss, infringement or abrogation of hunting, fishing, and gathering rights guaranteed to federally-recognized tribes by the United States through treaty, statute or Executive Order, including support for fulfilling tribal co-management responsibilities associated with the exercise of such rights.
- Development of full tribal capability and multi-disciplinary competence in the management of fish, wildlife and recreational resource programs through tribal contracting.
- Development and maintenance of a dynamic administrative environment which assures that fish, wildlife and recreational resource programs are conducted effectively, efficiently, and in compliance with established objectives, laws, regulations, court decisions, and other directives.

Base Program ($27,968,000; FTE 25): Generations of American Indians have developed lifestyles, cultures, religious beliefs and customs around their relationships with fish and wildlife. Historically, these resources provided food, shelter, clothing and tools, and were traded for a variety of goods. Fish, wildlife and outdoor recreation resources continue to provide a base of sustenance, cultural enrichment and economic development for many tribes, and help maintain tribal social structure and stability by permitting gainful employment in traditional and desirable occupations. Revenues generated through commercial fishing and recreational resource development programs help support numerous tribal governments.

Roles and responsibilities of American Indians in managing fish, wildlife and outdoor recreation resources, and the use of Indian hunting and fishing rights as tools in protecting these resources, are not widely recognized or understood. Since the mid-1970's, tribes have emerged as co-managers of nationally and internationally significant fish and wildlife resources. In this capacity, tribes work closely with state, Federal, regional and international authorities in fulfilling joint management responsibilities assigned through court orders, statutes and other legal instruments. Tribal programs on reservations contribute significantly toward meeting the growing national demand for outdoor recreation, accounting for millions of use days annually of hunting, fishing, camping, boating, and numerous and diverse other activities. Tribal fish hatcheries annually produce tens of millions of salmon, steelhead trout, walleye and other species. Tribal efforts also result in the protection of many millions of acres of habitat necessary for the conservation of nationally significant fish and game populations, including several listed as threatened and endangered.

Wildlife and Parks funds are contracted to tribes for population assessment, harvest management, habitat restoration, and other programs. Hundreds of tribal biologists, statisticians, hydrologists, enforcement officers, administrative personnel and other professionals participate in these efforts. Many tribes are directing substantial amounts of their own resources to support program activities and salaries.

A. Program Management

		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Area Office Operations	$	150	148	155	155	--
	(FTE)	(4)		(4)	(4)	(--)
Central Office Operations	$	399	394	408	408	--
	(FTE)	(3)		(3)	(3)	(--)
Total	$	549	542	563	563	--
	(FTE)	(7)		(7)	(7)	(--)

Area Office Operations ($155,000; FTE 4): These funds support Area Biologists located at the Minneapolis, Aberdeen and Albuquerque area offices. Qualified professionals classified as fish and/or wildlife biologists oversee Wildlife and Parks programs and expenditures, and advise and assist the bureau's contracting officials in the monitoring and evaluating of associated P.L. 93-638 contracts. Area Biologists also serve as liaisons between officials responsible for Wildlife and Parks program operations and budgets at the central office and agency levels, serve in an oversight capacity, and provide technical fish and wildlife assistance to tribes.

Central Office Operations ($408,000; FTE 3): Professional personnel in the central office are responsible for establishing program goals, objectives, policies, strategies, and procedures necessary for effective and efficient program administration. Central Office staff coordinates program planning, assists in budget formulation and execution processes, proposes systems for the effective delivery of program services, establishes procedures and conducts program evaluations and serves in a program oversight capacity. The staff also coordinates program responsibilities among area offices, agencies, tribes and inter-tribal organizations; analyze policy and legislation; prepares briefings and issue papers; responds to information inquiries; conducts special projects; performs internal control reviews for potential waste, fraud and abuse; and provides expertise and advice to the bureau's executive managers. Central Office staff also provides liaison with other federal and state agencies, participates in national and international meetings and negotiations, and assists in the overall management of trust responsibilities.

B. Unresolved Hunting and Fishing Rights

Base Program ($150,000; FTE 0): This activity supports tribes engaged in or anticipating litigation to define or clarify the scope of their hunting and fishing rights. Tribal participation in negotiations with other co-management interests in lieu of further litigation is also supported from this activity. Direction received from the courts and settlements negotiated with other co-management entities provide the basis for determining the nature and extent to which Indian hunting and fishing rights may be exercised in the context of overall resource allocation and conservation. The United States and the tribes require information to determine the extent to which treaty hunting and fishing rights may be asserted or exercised, including stock recruitment data, population abundance information, and data needed for the establishment of total allowable catch levels. Such information provides a basis for tribal management, by demonstrating to the satisfaction of the states and the courts that the tribes have the capacity to regulate their members' exercise of treaty hunting and fishing rights in a manner which assures appropriate conservation of the resources. Once these situations go beyond the litigation or negotiation phase to the implementation phase, support is provided through Rights Protection Implementation Programs to carry out the court rulings, settlements, and agreements.

C. Rights Protection Implementation Programs

		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Western Washington (Boldt)	$	9,364	9,237	9,701	7,341	-2,360
Columbia River Fisheries Management	$	1,701	1,678	1,710	1,410	-300
Voigt Case Area	$	2,903	2,864	2,906	2,033	-873
Michigan Fisheries Settlement	$	1,639	1,617	1,744	1,494	-250
Klamath Conservation	$	523	516	526	316	-210
US/Canada Pacific Salmon Treaty	$	2,592	2,557	2,597	2,597	--
Lake Roosevelt Management	$	--	--	--	300	+300
Total, Rights Protection Implementation	$	18,722	18,469	19,184	15,491	-3,693

Base Program ($19,184,000; FTE 0): Tribes require resources to implement programs needed to monitor and regulate Indian hunting and fishing activity, and to carry out biological investigations aimed at conserving associated populations upon which the meaningful exercise of the related rights depend. Court rulings reaffirming Indian treaty hunting and fishing rights have prompted increased attention to nationally significant fish and wildlife resources in ceded off-reservation areas which fall under the jurisdiction of a variety of tribal, state, regional, federal and international management entities. Under standards prescribed by the courts and by statute, these resources are protected, and tribal roles and responsibilities in managing them are assured through complex, interjurisdictional programs. Failure to maintain an effective tribal role in such programs could lead to increased state control of Indian hunting and fishing activity.

This program assists four inter-tribal organizations, their member tribes and other tribes in carrying out associated resource management roles and responsibilities. The inter-tribal bodies represent effective and efficient mechanisms for serving member tribes in treaty rights negotiations and implementation programs involving complex interjurisdictional resources.

1. Western Washington Fisheries Management ($9,701,000): The Boldt Decision of 1974 (U.S. v. Washington) reaffirmed that Stevens Treaty tribes in the State of Washington hold a valid treaty right to fish in usual and accustomed places, and upheld the position that the affected tribal governments must participate in the management of the resources involved. This decision prompted the establishment of the Northwest Indian Fisheries Commission (NWIFC) in 1975 by the treaty fishing tribes of western Washington. The

NWIFC serves as spokesman for the member tribes on fishing issues and has the authority to represent them before state and federal agencies. It also conducts extensive coded-wire tagging efforts, and coordinates the efforts of tribal biologists and managers in formulating harvest management, population assessment, stock enhancement, and data gathering programs.

Of this amount, $1,111,000 is contracted to the NWIFC to coordinate inter-tribal efforts in fulfilling tribal resource management responsibilities, to facilitate coordination with other management jurisdictions, to operate a fish health lab, and to develop shellfish plans. An additional $2,000,000 has been available for the Timber-Fish-Wildlife initiative added by Congress in FY 1988, FY 1989, and FY 1990; and $360,000 has been added for tribal fisheries: of the Lummi ($150,000), Quinault ($110,000), Suquamish ($50,000), and Stillaguamish ($50,000). The following amounts are contracted directly to the following member tribes:

Chehalis	$ 56,000	Puyallup	$ 268,000
Hoh	202,000	Quileute	426,000
Lummi	537,000	Quinault	939,000
Makah	410,000	Skagit	524,000
Muckleshoot	240,000	Squaxin Island	374,000
Nisqually	326,000	Stillaguamish	161,000
Nooksack	163,000	Suquamish	224,000
Point No Point	777,000	Tulalip	603,000
		Total	$6,230,000

2. Columbia River Fisheries Management ($1,710,000): Decisions in U.S. v. Oregon reaffirmed the rights of the four Columbia River Basin treaty tribes (Yakima, Umatilla, Warm Springs and Nez Perce) to a fair share of the fisheries resources. The Columbia River Inter-tribal Fish Commission (CRITFC) serves as the coordinating body for these tribes. Appropriated funds are contracted to the CRITFC to coordinate inter-tribal efforts in fulfilling tribal resource management responsibilities and to facilitate coordination with other management jurisdictions. Substantial co-management of the fisheries resources is required by court order and federal law through a multi-state, inter-tribal and federal agency network. Maintenance of tribal fishery programs allows the tribes and states to jointly manage and regulate Indian and non-Indian fisheries within the Columbia River Basin. Extensive efforts are also directed toward rebuilding upriver runs that have been depleted by over-harvest, habitat degradation and hydropower development. Of this amount, $300,000 is provided for the Upper Columbia United Tribes Fisheries Center.

3. Voigt Case Area Management ($2,906,000): In 1983, the Seventh Circuit Court of Appeals reaffirmed the reserved rights of several Bands of Lake Superior Chippewas to hunt, fish, trap and gather on public lands and waters ceded to the United States under the Treaties of 1837 and 1842 (Lac Courte Oreilles v. Voigt, 1983). These bands formed the Great Lakes Indian Fish and Wildlife Commission (GLIFWC) in 1984 to serve as an inter-tribal mechanism for implementing the Voigt decision through the securing of technical biological expertise, the development of sound natural resource management plans, the development of hunting and fishing regulations, and the strengthening of the tribal enforcement capability and court system. The GLIFWC also affords member tribes the opportunity to negotiate, as a unified entity, with the states of Michigan, Minnesota and Wisconsin in co-managing fish and wildlife resources. Appropriated funds are contracted to the GLIFWC to coordinate inter-tribal efforts in fulfilling tribal resource management responsibilities, and to facilitate coordination with other management jurisdictions.

4. *Michigan Fisheries Settlement ($1,744,000)*: In 1981, the fishing rights of Michigan tribes covered by the Treaty of 1836 were affirmed in federal court. Also in 1981, these tribes established the Chippewa/Ottawa Treaty Fishery Management Authority (COTFMA) to provide uniform joint regulations governing tribal fishing activities, to coordinate conservation enforcement activities, to coordinate initiatives regarding enhancement of the fishery, and to provide a forum for resolving policy issues. The inter-tribal fisheries staff performs stock assessment and research studies; recommends harvest quotas; prepares data for negotiations and litigation; and works with other tribal, state, federal and academic biologists throughout the Upper Great Lakes area. The tribes also participate on technical committees of the Great Lakes Fishery Commission, an international body established by treaty between the United States and Canada.

   In 1985, a negotiated fisheries agreement that was signed by all parties to the *U.S. v. Michigan* litigation was formalized through federal court action. The agreement provides for fisheries zonation plans for Lakes Superior, Michigan and Huron, a fisheries enhancement program, further development of cooperative management measures, expanded conservation enforcement programs, a tribal economic development program, and a comprehensive lake trout management program. Appropriated funds are used to implement this agreement, to coordinate inter-tribal efforts in fulfilling tribal resource management responsibilities, and to facilitate coordination with other management jurisdictions.

5. *Klamath Conservation Program ($526,000)*: The Klamath Tribe of Oregon retains hunting, fishing and gathering rights under the Treaty of 1864. A 1981 consent decree and order (Civil No. 73-155) identifies tribal responsibilities for the conservation and management of fish and wildlife resources through an agreement between the tribe, the state of Oregon and the United States. A 1985 decision by the Supreme Court in *Oregon Department of Fish and Wildlife v. Klamath Indian Tribe* held that tribal conservation and enforcement efforts are required on approximately 1.1 million acres of a former reservation. The Klamath Indian Game Commission participates in the planning, coordination and implementation of biological, conservation enforcement, and other related programs, and carries out its responsibilities in cooperation with state and federal resource management authorities.

6. *US/Canada Pacific Salmon Treaty ($2,597,000)*: Through representation on the Pacific Salmon Commission and panels created by the United States/Canada Pacific Salmon Treaty and its implementing legislation, the Northwest treaty tribes apply their management expertise in assessing and rebuilding salmon stocks of mutual concern to both countries. The treaty commits each country to prevent over-fishing, provides for optimum production, and creates a national and international forum through which cooperative management of salmon stocks occurs. The United States' obligation to implement the treaty includes providing support in the areas of management, administration, information collection/analysis and enhancement. Funds are contracted to the Columbia River Inter-Tribal Fish Commission and the Northwest Indian Fisheries Commission to carry out the programs developed by the Pacific Salmon Commission. Limited support has also been made available to the Metlakatla tribe which, though not a participant in the Pacific Salmon Commission, is impacted by Commission decisions.

D. Fish Hatchery Operations

Base Program ($4,213,000; FTE 18): Throughout the country, tribal fish hatcheries are engaged in a variety of production, rearing and stocking programs. Salmon and steelhead trout releases from tribal hatcheries in the Pacific Northwest benefit Indian and non-Indian commercial and sport fisheries in the United States and Canada. Returning spawners help satisfy subsistence and ceremonial needs and are frequently distributed to the elderly and poor. Throughout the rest of the country, recreational opportunities created by the stocking of catchable trout, walleye and other species attract numerous sport fishermen to Indian reservations. Revenues generated through the sale of fishing and camping permits help support hatchery operations and salaries of tribal biologists and conservation enforcement personnel.

In FY 1990, Congress provided increases of $150,000 for Lummi, $50,000 for Stillaguamish and $93,000 for the Makah Tribe. In addition, funds will be applied to support fish hatchery operations conducted by the following tribes:

Tribe	Amount	Tribe	Amount
Cherokee	$ 75,000	Nisqually	119,000
Bad River	46,000	Nooksack	28,000
Lac du Flambeau	274,000	Point No Point	303,000
Leech Lake	101,000	Puyallup	54,000
Red Lake	46,000	Quileute	45,000
Pyramid Lake	996,000	Quinault	242,000
Hoh	22,000	Skagit	55,000
Lummi	406,000	Squaxin Island	74,000
Makah	36,000	Stillaguamish	54,000
Metlakatla	341,000	Suquamish	200,000
Muckleshoot	101,000	Tulalip	302,000
		Total	3,920,000

E. Fish Hatchery Maintenance

Base Program ($200,000; FTE 0): Since FY 1988, Congress has provided funds for the maintenance of tribal fish hatcheries and related facilities. Criteria and procedures were developed to rank proposed maintenance projects submitted by the tribes, and funds were distributed to meet the highest priority needs. Maintenance has been defined as work that is required at periodic intervals (painting, paving, re-roofing, equipment servicing, etc.) to prolong the life of facility components and associated equipment, and to prevent the need for premature replacement and repair. Criteria established for ranking maintenance project proposals submitted by the tribes are as follows: (1) health, safety and security factors; (2) water quality compliance; (3) economic benefits and values; (4) rights protection and co-management responsibility fulfillment; and (5) resource enhancement and restoration.

F. Formerly Fish and Wildlife Service Technical Assistance

Base Program ($237,000; FTE 0): Formerly, funds were provided to the Fish and Wildlife Service (FWS) on a reimbursable basis for designated fish stocking services and technical assistance requested by tribes. In response to direction received from the Congress most of these funds were redirected to the FWS budget, and this remaining amount is distributed to the following tribes in support of related tribal resource management programs and staffs:

White Mountain Apache	$ 65,000
San Carlos Apache	65,000
Colorado River Tribes	58,000
Ute Tribe of the Uintah and Ouray Reservation	30,000
Rosebud Sioux Tribe	19,000
Total	$237,000

G. Tribal Management/Development Programs

Base Program ($3,421,000; FTE 0): Through P.L. 93-638 contracts executed by the bureau, numerous tribes have assembled professional staffs and developed comprehensive programs for conserving, managing and developing Indian fish and wildlife resources, and for interfacing with a host of state, regional and international jurisdictions in addressing the challenges of resource management. Funds will be applied to further develop the multi-disciplinary competence and the professional expertise of tribes and inter-tribal fish and wildlife organizations in expanding reservation economies, to create income-generating and job-producing programs through the development of fish, wildlife and outdoor recreational resources, and to reduce reliance on federal technical assistance programs. Of this amount, $200,000 will support the Columbia River Tribes in their participation in Wild and Scenic Rivers Act follow-up activities, $135,000 will be used to support the Native American Fish and Wildlife Society, $27,000 will assist the Forest County Potawatomi, Sokaogon and Menominee tribes, and $3,059,000 will be used to support the following tribal fish and wildlife resource management programs and staffs:

Tribe	Amount	Tribe	Amount
Penobscot	$ 80,000	Crow	49,000
Bad River	35,000	Fort Belknap	50,000
Fon du Lac	50,000	Fort Peck	25,000
Grand Portage	35,000	Northern Cheyenne	49,000
Keeweenaw Bay	70,000	Rocky Boys	25,000
Lac Court Oreilles	90,000	Shoshone-Araphahoe	100,000
Mille Lacs	30,000	Ute Mountain Ute	60,000
Oneida	60,000	Zuni	80,000
Red Cliff	235,000	Navajo	90,000
Red Lake	100,000	Summit Lake	84,000
St. Croix	35,000	Colville	107,000
Stockbridge-Munsee	25,000	Fort Hall	178,000
White Earth	120,000	Metlakatla	159,000
Crow Creek	49,000	Nez Perce	260,000
Devil's Lake	49,000	Umatilla	50,000
Lower Brule	70,000	Yakima	340,000
Blackfeet	220,000		
		Total	$3,059,000

Change from FY 1991 Base:

(Dollar amounts in thousands)

Program Element		FY 1991 Base	FY 1991 Estimate	+/- Difference
Unresolved Hunting and Fishing Rights	$	150	50	-100
Rights Protection Implementation Programs:				
Western Washington (Boldt)	$	9,701	7,341	-2,360
Columbia River Fisheries Mgmnt	$	1,710	1,410	-300
Voigt Case Area	$	2,906	2,033	-873
Michigan Fisheries Settlement	$	1,744	1,494	-250
Klamath Conservation	$	526	316	-210
Lake Roosevelt Management	$	--	300	+300
Fish Hatchery Operations	$	4,213	3,920	-293
Fish Hatchery Maintenance	$	200	--	-200
Tribal Management/ Development Program	$	3,421	3,221	-200
Total	$	24,571	20,085	-4,486

Unresolved Hunting and Fishing Rights ($-100,000; FTE 0): The one-time Congressional add-on in FY 1990 for unresolved treaty hunting and fishing rights issues in western Washington is not continued in FY 1991.

Rights Protection Implementation Programs ($-3,693,000; FTE 0)

Western Washington ($-2,360,000; FTE 0): The $2,000,000 add-on for the Timber-FishWildlife initiative is not continued. Future funds to support this initiative should come from the State of Washington and the timber harvesting companies who bear responsibility for the adverse fisheries impacts resulting from past forest practices. FY 1990 Congressional add-ons provided for Lummi tribal fisheries ($150,000), Quinault tribal fisheries ($110,000), Suquamish tribal fisheries ($50,000), and Stillaguamish tribal fisheries ($50,000) are also not continued.

Columbia River Fisheries Management ($-300,000; FTE 0): Congressional add-ons provided for the Upper Columbia United Tribes Fisheries Center since FY 1988 are not continued since Congress directed the center to seek other sources of operating funds.

Voigt Case Area ($-873,000; FTE 0): This portion of the FY 1990 Congressional add-on of $1,508,000 is not continued. The funding requested for the Great Lakes Indian Fish and Wildlife Commission in FY 1991 is adequate to provide for the delivery of basic biological, enforcement and judicial services to member tribes.

Michigan Fisheries Settlement ($-250,000; FTE 0): This amount was provided in FY 1990 for the one-time implementation of a fish marketing program by the Chippewa Ottawa Treaty Fishery Management Authority (COTFMA) in accordance with the 1985 Consent Decree and Agreement negotiated by the Department of the Interior, State of Michigan, treaty fishing tribes and others to resolve litigation in U.S. v. Michigan.

Klamath Conservation Program ($-210,000; FTE 0): Congressional add-ons provided for the restoration of depleted sucker species in Klamath Lake since FY 1988 are not continued. Unlike the U.S. Fish and Wildlife Service, the Bureau does not receive appropriated funds for work on species of fish and wildlife threatened with extinction. The sucker populations should be dealt with under the broad authorities of the Endangered Species Act.

Lake Roosevelt Management ($+300,000; FTE 0): This amount is requested for the implementation of an outdoor recreational resource management program by the Confederated Colville and Spokane tribes in the Lake Roosevelt Recreation Area above Grand Coulee Dam in eastern Washington. The program will be conducted in accordance with understandings reached with the Bureau of Reclamation, Bureau of Indian Affairs and National Park Service, which also have resource management roles and responsibilities in the area.

Fish Hatchery Operations ($-293,000; FTE 0): FY 1990 Congressional add-ons for the Lummi ($150,000) Sillaguamish ($50,000) and Makah ($93,000) are not continued in FY 1991. The base funding for these hatcheries is considered an adequate federal contribution.

Fish Hatchery Maintenance ($-200,000; FTE 0): Fish hatchery maintenance funds provided since FY 1988 have been applied to address the highest priority project proposals received from tribes throughout the country. The Bureau does not request funding in FY 1990 since the remaining projects are lower priority.

Tribal Management/Development Programs ($-200,000; FTE 0): The one-time Congressional add-on in FY 1990 for the Columbia River tribes to support their participation in Wild and Scenic Rivers Act follow-up activities is not continued.

Object Class Distribution - Wildlife and Parks Subactivity

	FTE	Amount
Personal Services.	--	+25,000
Personal Benefits.		+4,000
Other Services		$-4,515,000
Total	--	$-4,486,000

Justification of Program and Performance

Activity: Natural Resources Development

Subactivity Minerals and Mining

(Dollar amounts in thousands)

Program Element		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
A. Program Management	$	788	777	1,174	1,249	+75
	(FTE)	(22)		(32)	(32)	(--)
B. Mineral Assessments	$	3,000	2,959	3,000	2,550	-450
Linowes Positions	$	468	462	--	--	--
C. Special Projects	$	1,130	1,115	1,140	758	-382
	(FTE)	(10)		(--)	(--)	(--)
Total Requirements	$	5,386	5,313	5,314	4,557	-757
	(FTE)	(32)		(32)	(32)	(--)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Minerals and Mining	5,386	-73	5,313

The decrease will result in less funds available for mineral studies for resource development on Indian lands.

Objective: The minerals and mining program provides technical, economic, and land-use data and advice to Indian landowners, and to bureau and other federal agency personnel who are assisting Indian owners to manage and develop their mineral resources. Funds support cooperation in the planning, management and development of mineral resources with tribes, other agencies, councils and commissions and assist tribes in achieving the maximum income and employment return from utilization of their mineral resources.

Base Program ($5,314,000; FTE 32): The bureau is responsible for protecting the interests of Indian owners in the development of Indian minerals resources, including oil and gas and solid minerals. The bureau assists the tribes and individual Indians in attaining the maximum benefits which can be derived from resource development. The bureau's function is to provide technical assistance and guidance; the final decision on whether to develop resources is made by the tribes and individual Indian landowners.

The bureau will actively and aggressively pursue development of Indian minerals with emphasis on mineral commodities with economic viability in the world market and commodities for which a local market exists or can be developed, such as industrial minerals. Mineral development will result in financial independence for some tribes and individual tribal members. For others, it will provide a substantial contribution toward meeting their economic needs.

A. Program Management

Program Element		FY 1990 Enacted to Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Area Office	$	--	--	360	360	--
	(FTE)	(--)		(10)	(10)	(--)
Central Office Operations	$	788	777	814	889	+75
	(FTE)	(22)		(22)	(22)	(--)
Total	$	788	777	1,174	1,249	+75
	(FTE)	(22)		(32)	(32)	(--)

Base Program ($1,174,000; FTE 32):

Area Office ($360,000; FTE 10): This program will implement the recommendations of the Linowes Commission to assure the proper accountability of the royalties paid on minerals removed from Indian lands by way of direct support to the tribal mineral programs under jurisdiction of area offices. Although the responsibilities of the Linowes positions vary due to the different type of minerals located in the different area jurisdictions, some of these responsibilities include conducting inspections for site security, providing technical expertise in the negotiations of mineral agreements between the tribes and private industry, responding to Congressional inquiries, as well as requests from the Central Office, other federal agencies, private industry, and the general public.

Central Office ($814,000; FTE 22): The central office Division of Minerals and Mining has responsibility for developing policy and performing oversight, review and evaluation of the activities to protect, assess, explore and develop Indian mineral resources (including oil and gas and solid minerals). The staff conducts cyclic evaluations of area office operations as part of the Office of Trust and Economic Development interdisciplinary program evaluation policy. This evaluation process ensures compliance with established policies and standards for quality improvement purposes. Emphasis is placed on the identification of program strengths and weaknesses so that improvement actions can be taken to eliminate service delivery weaknesses and successes can be used as models across bureau programs.

Increased emphasis is being placed on oversight of operations management conducted by the Bureau of Land Management and the Minerals Management Service; specifically, inspection and enforcement of oil and gas operations, reservoir management, which includes unitization, communitization and drainage which are part of the intensified concern being directed to problems identified during Senate investigations.

This office consists of staff located in Washington, D.C. and Lakewood, Colorado, who are responsible for:

(1) coordinating bureau activities involving Indian mineral resources with other Interior bureaus involved with mineral assessments and royalty management activities;

(2) developing regulations and procedures for application by area and agency offices;

(3) providing advice to bureau management on mineral related technical issues;

(4) monitoring of interagency agreements to establish and maintain data bases of tribal mineral resources identified in Phase I literature search, seismic data processing, geotechnical data analysis and data transfer, and geophysical exploration and interpretation functions;

(5) conducting economic analyses of mineral development potential; and

(6) providing technical assistance to tribes in the development of proposals and applications for mineral assessments.

B. Mineral Assessments

Base Program ($3,000,000; FTE 0): The Mineral Assessments program began in FY 1975 and consists of work performed under interagency agreements with the Bureau of Mines and the U.S. Geological Survey where multiple tribes are involved or by direct contracting with tribes under P.L. 93-638. The general structure of the program under the interagency agreements consists of three phases:

> Phase I is a literature search to collect available data specific to a reservation for compilation into a single information volume.
>
> Phase II efforts are undertaken if favorable conditions for significant mineral development have been identified on a reservation but require additional onsite data collection for validation and assessment. This new data is acquired by application of modern exploration techniques, such as geological mapping, geochemical analysis, assays, geophysical studies, drilling, exploratory excavations or other techniques.
>
> Phase III applies more sophisticated procedures to quantify the economically valuable resource, establish value of the resource in place, determine the viability of economic production, perform market and economic analysis and possibly provide operational and design recommendations.

Phase I studies have been completed for all reservations. If warranted, Phase II and III programs are performed on those reservations where tribes request these levels of mineral assessments for use in development of their mineral resources. Funding is based on tribal application which includes (1) a tribal resolution requesting mineral assessments and the identification of how the tribe prefers to conduct the assessment; (2) agency and area office recommended approval; (3) a written statement declaring their willingness for development of potential resources discovered; and (4) a detailed work plan and budget. The information in the application is critiqued and a numerical rating assigned based on the following three factors: mineral potential, commodity marketing, and the tribe's willingness to develop the commodity.

Presently, 68 reservations, including over 43 million acres and representing approximately 80% of the trust land base, have had or are currently undergoing a Phase II or Phase III mineral assessment. If less than 50% of the resources delineated in these studies are mineable with a reasonable profit over the cost of mining, it would represent a potential income of several billion dollars to developers and the Indian minerals owners over a period of many years. There is an increased interest in mineral resources on Indian lands, and several tribes are presently being approached by mining companies for possible development of specific minerals on the reservations. The mineral industry's interest is attributed directly to availability of geologic information generated by the bureau's mineral assessment program.

The Energy and Mineral Resources Division performs complex computer program economic evaluations on existing and proposed mineral leases, profit sharing agreements, and other types of contracts. The purpose of this assistance is to provide the tribes with a higher level of economic information concerning mineral agreements, thereby enhancing their development negotiating position. The work consists of computer-generated discounted cash flow returns on investment, and analyses of the economics of mineral recovery operations. The Division also provides selected information on current oil and gas activity. This work consists of data compilation by the geographic information systems and remote sensing on oil and gas drilling activities, well completions, and the generation of maps to portray current oil and gas activities. Summary reports are prepared at the request of the tribes. Information contained in the reports is not made public without the tribe's written permission.

The Council of Energy Resource Tribes (CERT) is also funded in this element and provides the tribes with economic analysis, feasibility studies, market studies, development plans, management structuring, mineral assessments, negotiations, etc., primarily related to mineral development.

Workload Data

The following table displays the historical funding of the various phases of the Mineral Assessment Program.

MINERAL ASSESSMENT PROGRAM FUNDING ($000)

	1983	1984	1985	1986	1987	1988	1989	1990*	1991*
P.L. 93-638 Tribal Contracts									
Phase II	0	0	0	0	0	0	0	2,619	2,550
Phase III	0	0	0	0	0	0	0	0	0
Subtotal	0	0	0	0	0	0	0	2,619	2,550
Bureau of Mines									
Phase I	0	0	0	0	0	0	0	0	0
Phase II	246	321	329	194	169	300	300	120	0
Phase III	1,218	469	1,151	1,343	498	0	0	0	0
Subtotal........	1,464	790	1,480	1,537	667	300	300	120	0
U. S. Geological Survey									
Phase I	0	0	0	0	0	0	0	0	0
Phase II	2,976	2,380	4,060	3,706	2,810	700	700	261	0
Phase III	0	129	35	200	0	0	0	0	0
Subtotal........	2,976	2,509	4,095	3,906	2,810	700	700	261	0
GRAND TOTAL	4,440	3,299	5,575	5,443	3,477	1,000	1,000	3,000	2,550

* Proposed distribution

C. Special Projects

Base Program ($1,140,000; FTE 0): These funds will be used to support specific task forces to develop administrative and operational procedures for bureauwide minerals and mining functions, which includes such items as procedural guidelines, manuals and regulations; and implementation of annual program evaluation and accountability reviews (A-123) to further improve and update the bureau's mining program and royalty management activities.

The bureau will also continue a data management project (Pentastar) which assembles and collates data specific to Indian Energy and Mineral development into a single data bank for use by Energy and Mineral geoscientists. The data information for Indian mineral development is accumulated within the various Interior agencies, through private petroleum and mining industry generated sources, and through the bureau's mineral assessment program. The data information accumulated in the data bank will subsequently be analyzed and summarized to disclose the mineral potential of various Indian lands throughout the United States.

Change from FY 1991 Base:

(Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	+/- Difference
Program Management: Central Office	$	814	889	+75
	FTE	(32)	(32)	(--)
Mineral Assessments	$	3,000	2,550	-450
Special Projects	$	1,140	758	-382
Total	$	4,954	4,197	-757
	FTE	(32)	(32)	(--)

Central Office ($+75,000; FTE 0): This increase will fully fund salaries, employee benefits, and operational costs for the three Linowes positions located in the Central Office. In prior years these positions have been partially funded from the Special Projects line of the budget.

Mineral Assessments (-$450,000; FTE 0): The decrease is the result of the completion of Phase I literature search and data collection on all reservations and the substantial completion of the Phase II mineral assessments requested by tribes.

Special Projects (-$382,000; FTE 0): The decrease is the result of the transfer of the management of oil and gas leases (royalty management files and oil and gas lease bond functions are included in the transfer) and the automated royalty distribution system and Integrated Records Management System quality control activities to the Division of Real Estate Services, Central Office Operations. The Congressional add-on of $250,000 for the Council of Energy Resource Tribes (CERT) is not continued in FY 1991. The Council should seek other sources of funding.

Object Class Distribution - Minerals and Mining Subactivity

	FTE	Amount
Total Personnel Compensation...........................	--	$ +32,000
Personnel Benefits....................................		+ 4,000
Other Services..		-793,000
Total..	--	$ -757,000

Justification of Program and Performance

Activity: Natural Resources Development
Subactivity: Tribe/Agency Operations

(Dollars amounts in thousands)

Program Element		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
A. Natural Resources, General	$	1,443	1,423	1,454	1,885	+431
	(FTE)	(5)		(5)	(19)	(+14)
B. Agriculture	$	19,615	19,349	20,264	19,761	-503
	(FTE)	(384)		(384)	(384)	(--)
C. Agriculture Extension Services	$	458	452	466	446	-20
D. Forestry	$	22,429	22,125	22,212	21,666	-546
	(FTE)	(442)		(442)	(442)	(--)
E. Water Resources	$	2,189	2,159	2,199	2,014	-185
	(FTE)	(2)		(2)	(1)	(-1)
F. Wildlife & Parks	$	6,693	6,602	6,752	6,454	-298
	(FTE)	(20)		(20)	(20)	(--)
G. Minerals & Mining	$	1,635	1,613	1,848	1,737	-111
	(FTE)	(40)		(40)	(40)	(--)
Total Requirements	$	54,462	53,723	55,195	53,963	-1,232
	(FTE)	(893)		(893)	(906)	(+13)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Tribe/Agency Operations	$ 54,462	-739	53,723

The sequestration will be applied equitably against each location which has funding in these programs. Necessary reductions will be determined at the local level or by tribal contractors.

Base Program ($55,195,000; FTE 893): All funding for tribe/agency operations dealing with the natural resources programs is justified under this subactivity. This funding supports stable and continuing natural resource programs that are subject to local tribal priorities rather than programmatic and national priorities.

A. Natural Resources, General

Base Program ($1,456,000; FTE 5): At the tribe/agency level, this program provides funding for multi-disciplinary activities not readily identified with one particular natural resource program and for staff responsible for administering multi-discfplinary activities including contracts with Indian tribes, sometimes covering various natural resource programs under a single contract. Accomplishments under tribal contracting include conservation studies and inventories in the various natural resource disciplines.

Workload Data: Workload includes assistance in establishing policy, regulations, and procedures; developing budget and financial plans; providing advice and counsel to tribes; and supporting, directing and overseeing administrative matters affecting Natural Resources.

B. Agriculture

Base Program ($20,264,000, FTE 384): The Agriculture program provides tribes, landowners and land users with technical assistance to increase the use of agricultural resources and improve management activities. Multiple-use program planning and technical assistance are designed to protect the renewable natural resources against erosion and soil deterioration; to restore eroded and depleted areas; to stabilize runoff and protect sediment on land areas; to improve cover with adapted crop species on farmland, forest, pasture and rangeland; and to retain water for farm and ranch use and water management. These activities can only be accomplished through implementation of modern inventory and management techniques designed to interpret and determine potential for present and future use of the resources.

Within the bureau, management of agronomic and range resources is decentralized, with professional staff located at 11 area offices and 76 agency offices in 26 states, providing technical assistance to 284 Indian reservations encompassing over 46 million acres. The staff also provides technical assistance, support and resources to help develop and implement the wildlife and parks program at the reservation level. Staff initiates environmental reviews for trust lands, except forested land, and review all environmental assessments completed by other agencies.

The agency staff provides the daily contact with tribes, landowners, and land users on matters relating to: (1) planning; (2) management; (3) conservation; (4) development; (5) utilization of Indian soil, water and rangeland resources; and (6) administration of the agency pesticide program on Indian lands. Staff also provides technical assistance to tribes who may want to contract for the program under P.L. 93-638.

The farming and ranching operations on most reservations are an important part of the economy and provide considerable employment and income. Over 46 million acres of Indian land are used primarily for farming and grazing by domestic livestock and big game animals. This is approximately four-fifths of the total trust land area.

Table 1 shows funding sources and amounts provided to Indian landowners and land users to accomplish agriculture conservation projects and programs on Indian land, e.g., water systems, fencing, brush control, reseeding, concrete ditch lining, land leveling, strip cropping, terracing, winter cover crop, wind and water erosion control, farm pond development, drainage control and shelterbelts.

TABLE 1

Funding Sources for Agricultural Projects and Programs for Dry Farmland and Rangeland

	($ in millions)			
	1987	1988	Est. 1989	Est. 1990
USDA */	1.9	1.0	1.5	1.0
BIA	6.0	3.4	2.5	1.5
Tribes	1.5	.8	1.0	1.0
Landowners/Operators Contributions.	10.8	5.2	5.0	3.5

*/ USDA/ASCS (Agricultural Stabilization and Conservation Service) - Cost-share funds to landowners and operators for approved conservation practices.

The following activities reflect accomplishments of the agriculture program:

Inventory and Research: Soil and range inventory surveys, land evaluation surveys and range utilization surveys are conducted under this program.

Soil surveys and investigations are completed on Indian trust land resources to provide a data base of information about soil productivity, erosion, stability problems and other physical land factors needed for program development, conservation planning, and the installation of planned practices. Almost all bureau soil surveys are conducted as part of the National Cooperative Soil Survey (NCSS) and using NCSS Standards.

Range inventories and range utilization surveys are made to identify vegetative cover; soil characteristics; precipitation zones; elevation aspect and past utilization for season of use and type of livestock to be grazed; recommended stocking rate; and planning.

Farm and Range Planning: The bureau provides technical assistance to Indian tribes, owners and land users for planning of renewable natural resources on Indian trust lands for highest and best use. Land management planning is a continuous process that responds to changes in the demands made upon the supply of renewable resources. The bureau, in cooperation with the Indian landowners, tribal governments and land users, will update and amend land use plans and promote sustained-yield management, as needed, to insure that adequate resources will be available for future generations.

Farmland Improvements: Technical assistance is provided by the Agriculture staff includes preparing and designing land leveling; farm drainage design; fertility recommendations; farm pond specifications; wind and water erosion control recommendations; boundary surveys for fencing; water development engineering and design; special measures for soil and water management necessary to prevent flooding, siltation and agricultural related pollutants; and brush and noxious weed control and eradication.

Rangeland Improvements: Technical assistance provided for rangeland improvements includes livestock rotation recommendations, feeding requirements, pest control management recommendations, brush and noxious weed control and eradication, reseeding, range management planning, wildlife and parks planning and environmental compliance actions.

Rangeland Protection: Includes all activities concerned with the administration and management of the eradication and control of insects and rodents, and presuppression work and maintenance of readiness conditions for fire suppression.

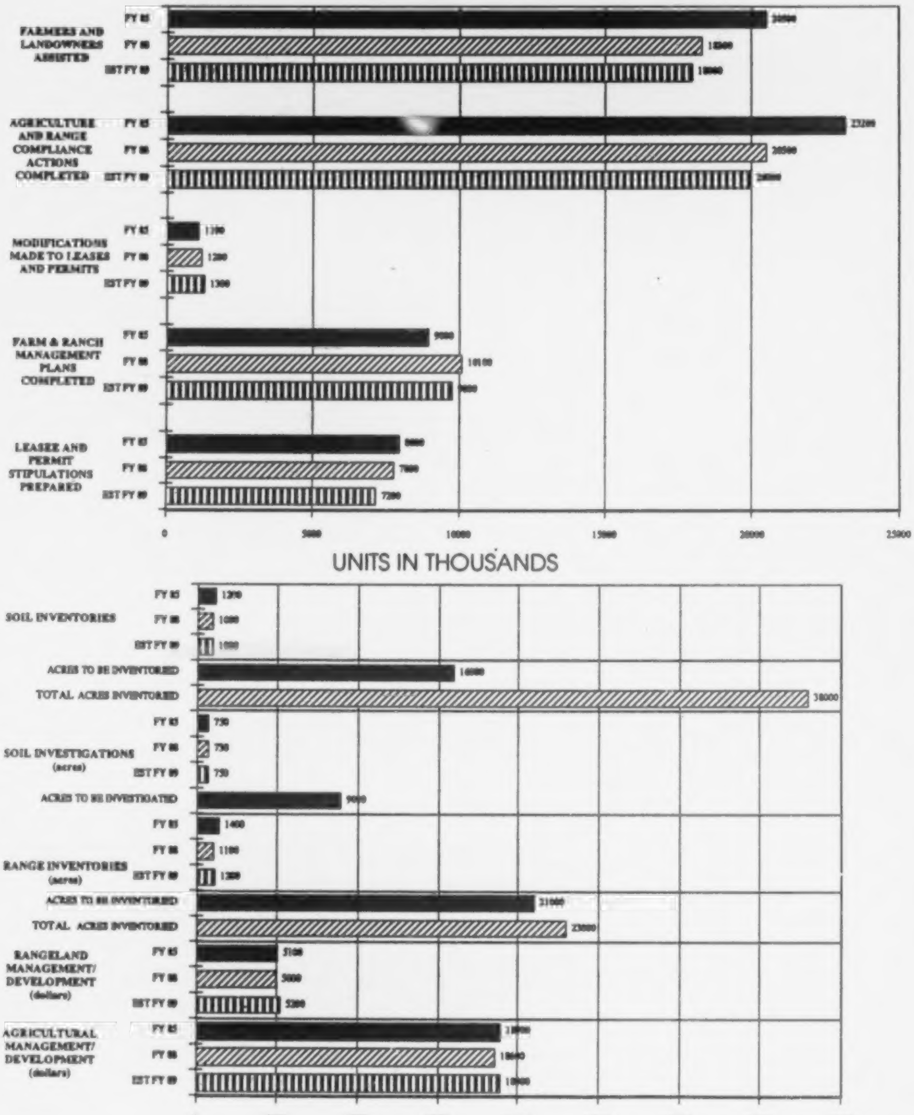
Leasing and Permitting Services: The Agriculture staff supports the leasing and permitting program by servicing lease and permit preparations, modifications, stipulations (protective convenants), changes and enforcement actions on farming and pasture leases. Inspections are made on farming operations directly to evaluate compliance with lease requirements, performance and use. The bureau monitors the use of rangeland, and changes in ranch operations or land ownership, and modifies grazing permits in order to improve rangeland resources and their utilization. Stocking rates are adjusted by changing conditions, area site, and changes in land ownership.

Contract Monitoring: The Agriculture staff provides technical assistance to review tribal self-determination contract and grant proposals requested under P.L. 93-638. Whenever a contract or grant is awarded to a tribe, additional costs are encountered to provide oversight and to monitor the contract or grant for compliance.

Workload Data for Agriculture Program

	Unit	FY 1987	FY 1988	FY 1989	FY 1990
Farmers and Landowners assisted:	(No.)	19,000	18,300	18,500	19,000
Ranchers and Landowners assisted:	(No.)	12,000	11,000	11,500	12,000
Soil Inventories	(M Acres)	1,400	1,500	1,700	1,700
Ag. Cons. Management and Development	(M$)	18,600	18,600	18,700	18,800
Rangeland Cons. Mgmt. and Development Measures	(M$)	4,800	5,000	5,200	5,300
Farm and Ranch Management Plans	(No.)	8,600	9,000	9,200	9,500
Farm Lease Stipulations Prepared:	(No.)	7,600	7,800	8,000	8,200
Compliance Actions	(No.)	20,200	20,500	21,000	21,300
Soil Investigations	(M Acres)	700	730	750	750
Range Permit Modifications	(No.)	6,500	6,800	6,800	7,000
Range Unit Compliance Inspections	(No.)	5,700	6,000	6,000	6,200
Range Inventories	(M Acres)	1,425	1,400	1,400	1,500

WORKLOAD DATA FOR AGRICULTURE PROGRAM
FISCAL YEARS 1985 - 1988 - 1989



C. Agriculture Extension Services

Base Program ($466,000; FTE 0): This program is one which the bureau generally contracts with either state land grant colleges and universities or with the tribes. The bureau contracts with colleges to provide technical advice and assistance in areas such as agriculture, soil restoration, crop rotation, animal husbandry, use of controlled substances, home extension services, and 4-H Club activities. The Indian tribes which do not contract with state universities and colleges usually use the funding to hire their own extension agents and home economists. Approximately 100 tribes will benefit from this program during FY 1990.

D. Forestry

Base Program ($22,212,000, FTE 442): The forestry program at the tribe/agency level provides forest management services on 14.1 million acres of Indian forest land. This is accomplished by employing the most modern inventory and management planning systems, by harvesting the full allowable annual cut and maintaining accruals with consideration of other use values and tribal objectives, by intensifying forest development activities to eliminate backlog, by enhancing forest productivity (growth) and by providing assistance to tribes and individual Indians in development and management of forest products industries. The bureau's trust responsibility in forestry is extended to approximately 115 trust forested reservations or properties in 23 states, with a commercial forest land base of approximately 5.9 million acres that support a total commercial volume of about 45.1 billion board feet and an allowable annual cut of 1.03 billion board feet. In addition to this, technical assistance services in all forestry aspects are provided to Alaska Native Claims Settlement Act (ANCSA) allotted lands, which, when fully conveyed, will comprise a forest land base in Alaska of approximately 300,000 acres. Approximately 6.8 million acres of "woodland area" are considered in multiple-use management planning because of their increasing importance in overall resources management, and a value of forest products other than lumber or veneer. Forestry program staff work closely with several other bureau programs, including: (1) Agriculture and Range Management; (2) Fish and Wildlife; (3) Environmental Services; (4) Realty, particularly appraisals and to obtain ownership (title) information on allotments; (5) Law Enforcement, for assistance in trespass investigations; and (6) Water Resources, for water productivity and protection of groundwater levels.

The bureau cooperates with the Forest Service and other federal and state agencies in the protection of Indian lands and adjacent lands from insects and disease. The Forest Service, by law, is the lead agency for major protective actions and securing the necessary funding for them.

The following describes the various Forestry Program activities, with estimates of funding utilized in each:

Forest Development ($1,686,000): This component includes all activities of reforestation and timber stand improvement necessary to properly manage the commercial Indian forest for a sustained yield of desired forest products. Some activities conducted by tribes in this program are: (1) site preparation; (2) seed/cone collection; (3) planting; (4) greenhouse operations; (5) protection of young forest stands; (6) pre-commercial thinning; (7) fertilization; (8) weeding; (9) release; and (10) species conversion. These activities include all the scheduled periodic silvicultural treatments applied to a forest to bring a newly established plantation to commercial harvest size and value.

Timber Sale Management ($9,983,000): This activity includes all aspects of sale and contract preparation: (1) cruising, silvicultural prescriptions, appraisals, advertisement, etc.; (2) executing/supervising contracts; (3) marking and scaling timber; and (4) collecting, recording and distributing stumpage receipts. These funds are generally used for personal services and related travel and operating expenses, as-well-as for contracts for mapping, data gathering, surveys, etc.

Forest Management Inventories and Plans ($1,433,000): This component encompasses: (1) aerial photography; (2) mapping; (3) field forest management inventories; (4) reinventories; (5) growth studies; (6) allowable annual cut calculations; and (7) all aspects of the development, preparation and/or revision of multiple-use forest management plans, including inventory analysis, environmental assessment and forest history.

Forest Program Management ($6,080,000): Included within this line item are all forestry management and administrative activities not included in other forestry components. These activities include program audit review and followup, program management, and oversight.

Forest Protection ($3,030,000): This component includes all activities which comprise protection of the forest from fire, insects, disease and trespass. With respect to fire management, protection consists of: (1) acquisition/maintenance of firefighting equipment; (2) fire detection systems; (3) construction of fire breaks; (4) hazard reduction; and (5) fire protection contracts with other agencies.

The control of insects and disease encompasses: (1) all aspects of detection and evaluation; (2) preparation of project proposals to secure funding, including project descriptions, environmental assessments/statements, and cost/benefit analysis; (3) field suppression operations; and (4) reports.

Timber and fire trespass activities involve: (1) field examination and survey; (2) damage appraisal; (3) preparation of reports; (4) assisting in investigations; (5) writing demand letters; and (6) giving depositions.

E. Water Resources

Base Program ($2,199,000; FTE 2): Program funds are used by tribes to 1) retain permanent tribal technical staff and 2) to support ongoing collection and analysis of baseline data and information in order to manage and develop reservation water resources. These program funds differ from non-IPS Water Resources Management, Planning and Pre-Development funds in that those funds are allocated for tribal project work which can be completed in a determinable number of years. These program dollars often represent a tribe's base-level of funding to which tribal revenues are added to enable permanent tribal water resources management capabilities. This IPS program complements its non-IPS program counterpart by sustaining threshold tribal management structures to effect implementation of the kind of tribal water resources management plans contemplated by the President's 10-Year Plan for the Review of Indian Water Rights Claims, August 1980.

F. Wildlife & Parks

Base Program ($6,752,000; FTE 20): Indian reservations have the potential for contributing significantly toward meeting national fishing, hunting, camping and other recreational demands, while providing critical habitat for important fish, game, non-game and plant species, and a base for cultural enrichment and economic development. This program provides assistance to tribes in the conservation, development and utilization of fish, wildlife and recreational resources, and promotes their capabilities in resource management, enhancement, regulation and enforcement. Through this program, tribes develop and refine program goals, objectives and strategies, and are able to increase and improve their technical capabilities in order to assume greater responsibility for managing fish, wildlife and recreation resources. Tribes also are able to collect baseline inventory data, assess resource development potential, implement fish and wildlife plans, promote the training of tribal members in fish and wildlife conservation, conduct special studies, support resource enhancement, protection, and management related activities, and assume responsibility for programs previously conducted by the Fish and Wildlife Service.

G. Minerals and Mining

Base Program ($1,848,000; FTE 40): Funds at this level are used for the complete scope of program operations, including personal services, travel, contracting, training, and other needs. At the present time, tribe/agency funds appear at a limited number of locations having on-going programs, such as Spokane, Navajo, Osage, and others where leasing activities are in progress. As more Phase II studies are completed with funds in the Field Operations part of the budget, it is expected that more tribes will give priority to minerals and mining funding in their future budgets.

Funds are presently utilized for: (1) the mineral leasing and accounting staff at Osage; (2) feasibility studies and mining plans; (3) geologists; (4) exploration and development; (5) lease compliance on oil and gas contracts; (6) oil and gas assignments; (7) environmental reviews; (8) training on such things as communication agreements; (9) travel; and (10) reproduction of materials.

Change from FY 1991 Base:

(Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Request	+/- Difference
Natural Resources, General	$	1,454	1,885	+431
	(FTE)	(5)	(19)	(+14)
Agriculture	$	20,264	19,761	-503
Agriculture Extension Services	$	466	446	-20
Forestry	$	22,212	21,666	-546
Water Resources	$	2,199	2,014	-185
	(FTE)	(2)	(1)	(-1)
Wildlife & Parks	$	6,752	6,454	-298
Minerals & Mining	$	1,848	1,737	-111
Total	$	55,195	53,963	-1,232
	(FTE)	(7)	(20)	(+13)

Natural Resources, General (+$431,000; FTE +14): The increase of $431,000 results from the application of the Indian Priority System at the tribe/agency level.

	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$120,700	$131,700	$ +11,000
Billings Area	---	90,000	+90,000
Juneau Area	272,900	333,900	+61,000
Minneapolis Area	61,000	61,000	---
Muskogee Area	400,900	368,100	-32,800
Phoenix Area	117,300	51,100	-66,200
Sacramento Area	60,000	36,000	-24,000
Albuquerque Area	---	311,000	+311,000
Portland Area	170,900	259,900	+89,000
Eastern Area	239,300	231,300	-8,000
TOTAL TRIBAL PRIORITIES	$1,443,000	$1,874,000	$+431,000
ADJUSTMENTS			
One additional workday		+1,000	
Adjustment for Administrative and Staffing Efficiencies		-3,000	
FY 1991 Federal Pay Adjustments		+2,000	
P.L. 93-638 Contractor Pay Cost Adjustments		+6,000	
Federal Employees Retirement System (FERS)		+5,000	
FY 1991 REQUEST....................................		$1,885,000	$+431,000

Agriculture (-$503,000; FTE 0): The decrease of $503,000 results from the application of the Indian Priority System at the tribe/agency level.

	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$2,283,500	$2,257,800	$ -25,700
Anadarko Area	1,139,000	1,140,700	+1,700
Billings Area	1,955,200	1,966,700	+11,500
Juneau Area	602,800	571,500	-31,300
Minneapolis Area	29,000	29,000	---
Muskogee Area	850,000	856,000	+6,000
Phoenix Area	3,654,800	3,636,800	-18,000
Sacramento Area	184,300	183,300	-1,000
Albuquerque Area	3,026,400	2,700,000	-326,400
Navajo Area	3,283,900	3,159,000	-124,900
Portland Area	2,148,300	2,125,500	-22,800
Eastern Area	457,800	485,700	+27,900
TOTAL TRIBAL PRIORITIES	$19,615,000	$19,112,000	$ -503,000
ADJUSTMENTS:			
One additional workday		+55,000	
Adjustment for Administrative and Staffing Efficiencies		-207,000	
FY 1991 Federal Pay Adjustments		+161,000	
P.L. 93-638 Contractor Pay Cost Adjustments		+15,000	
Federal Employees Retirement System (FERS)		+259,000	
PROGRAM ADJUSTMENTS:			
Navajo Area Base Transfer from Area Office Operations		+366,000	
FY 1991 REQUEST		$19,761,000	$ -503,000

Agriculture Extension Services (-$20,000; FTE 0): The decrease of $20,000 results from the application of the Indian Priority System at the tribe/agency level.

	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$44,400	$44,400	$ ---
Billings Area	45,000	48,000	+3,000
Juneau Area	10,000	10,000	---
Phoenix Area	52,700	25,400	-27,300
Albuquerque Area	68,000	63,000	-5,000
Portland Area	81,500	81,300	-200
Eastern Area	156,400	165,900	+9,500
TOTAL TRIBAL PRIORITIES	$458,000	$438,000	$-20,000
ADJUSTMENTS:			
P.L. 93-638 Contractor Pay Cost Adjustments		+4,000	
Federal Employees Retirement System (FERS)		+4,000	
FY 1991 REQUEST		$446,000	$-20,000

Forestry (-$546,000; FTE 0): The decrease of $546,000 is the net of the following changes:

-- Reductions of $124,000 result from the application of the Indian Priority System at the tribe/agency level.

-- Reductions of $322,000 for Grande Ronde since the FY 1990 Congressional add-on of $455,000 included that amount for start-up costs. The request of $133,000 will support their ongoing operation.

-- The FY 1990 Congressional add-on of $2.5 million for Timber Sale Administration was reduced by $100,000 in accordance with the historical amount of this add-on which is $2.4 million.

Forestry

	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$157,700	$150,000	$ -7,700
Anadarko Area	112,000	49,000	-63,000
Billings Area	811,000	826,000	+15,000
Juneau Area	590,300	493,000	-97,300
Minneapolis Area	1,611,400	1,599,000	-12,400
Muskogee Area	149,700	150,000	+300
Phoenix Area	2,405,700	2,318,000	-87,700
Sacramento Area	702,300	717,000	+14,700
Albuquerque Area	1,261,000	1,307,000	+46,000
Navajo Area	485,700	603,000	+117,300
Portland Area	9,122,100	9,066,000	-56,100
Eastern Area	790,100	797,000	+6,900
TOTAL TRIBAL PRIORITIES	$18,199,000	$18,075,000	$-124,000
CONGRESSIONAL ADD-ONS:			
Passamaquoddy	100,000	100,000	
Grande Ronde	455,000	133,000	-322,000
Quinault (New land)	200,000	200,000	
Jicarilla (New land)	75,000	75,000	
Menominee	500,000	--	
San Carlos	200,000	200,000	
White Mountain Apache	200,000	200,000	
Timber Sales Administration	2,500,000	2,400,000	-100,000
FY 1990 ENACTED TO DATE	$ 22,429,000		
ADJUSTMENTS:			
One additional workday		+65,000	
Adjustment for Administrative and Staffing Efficiencies		-239,000	
FY 1991 Federal Pay Adjustments		+186,000	
P.L. 93-638 Contractor Pay Cost Adjustments		+26,000	
Federal Employees Retirement System (FERS)		+245,000	
Transfer Menominee Forestry funding out of Tribe/Agency at the request of the Tribe		-500,000	
FY 1991 REQUEST		$21,666,000	$-546,000

Water Resources (-$185,000; FTE -1): The decrease of $185,000 is comprised of:

-- a decrease of $35,000 as a result of the application of the Indian Priority System at the tribe/agency level; and

-- a reduction of the Congressional add-on of $150,000 for tribes on the Fort Berthold Reservation in North Dakota. The funds were to enable the tribes to hire water management expertise for negotiations with the state of North Dakota.

	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$210,400	$181,400	$-29,000
Billings Area	169,000	167,500	-1,500
Juneau Area	11,100	11,100	---
Minneapolis Area	1,000	1,000	---
Phoenix Area	4,000	---	-4,000
Albuquerque Area	23,000	23,000	---
Navajo Area	445,400	444,900	-500
Portland Area	225,100	225,100	---
TOTAL TRIBAL PRIORITIES	$1,089,000	$1,054,000	$-35,000
CONGRESSIONAL ADD-ONS:			
Flathead	250,000	250,000	
Miccosukee	200,000	200,000	
Seminole	500,000	500,000	
North Dakota Tribes	150,000		-150,000
FY 1990 ENACTED TO DATE.........	$2,189,000		
ADJUSTMENTS:			
Adjustment for Administrative and Staffing Efficiencies		-1,000	
FY 1991 Federal Pay Adjustments		+1,000	
P.L. 93-638 Contractor Pay Cost Adjustments		+8,000	
Federal Employees Retirement System (FERS)		+2,000	
FY 1991 REQUEST..................................		$2,014,000	$-185,000

Wildlife & Parks (-$298,000; FTE 0): The reduction of $298,000 is the net of the following items:

-- a decrease of $298,000 as a result of the application of the Indian Priority System at the tribe/agency level;

-- an increase of $100,000 to continue the FY 1989 Congressional add-on for the Columbia River Tribes to participate in planning decisions for the Columbia River Gorge National Scenic Area; and

— a decrease of $100,000 for Grants to the Montana Tribes. Congress has provided two years of funding for the Tribes to develop fish and game codes, and their ongoing Tribe/Agency program should be able to fund the cost of implementation.

	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$704,800	$694,000	$-10,800
Anadarko Area	94,000	22,000	-72,000
Juneau Area	474,400	475,000	+600
Minneapolis Area	900,800	837,000	-63,800
Phoenix Area	131,400	116,000	-15,400
Sacramento Area	704,000	704,000	---
Albuquerque Area	354,600	215,000	-139,600
Navajo Area	132,400	135,000	+2,600
Portland Area	1,214,200	1,215,000	+800
Eastern Area	377,400	377,000	-400
TOTAL TRIBAL PRIORITIES	$5,088,000	$4,790,000	$-298,000
CONGRESSIONAL ADD-ONS:			
Cheyenne River	100,000	100,000	
Umatilla	50,000	50,000	
Taos Blue Lake Wilderness	111,000	111,000	
Sault Ste Marie	100,000	100,000	
Leech Lake	100,000	100,000	
Yakima	100,000	100,000	
Grants to Montana Tribes	100,000		-100,000
Oglala Sioux	150,000	150,000	
Covelo	84,000	84,000	
Red Lake	200,000	200,000	
Nisqually	60,000	60,000	
Navajo Heritage	200,000	200,000	
Karuk	100,000	100,000	
White Earth	50,000	50,000	
Nez Perce	100,000	100,000	
FY 1990 ENACTED TO DATE	$6,693,000		
ADJUSTMENTS:			
One additional workday		+4,000	
Adjustment for Administrative and Staffing Efficiencies		-11,000	
FY 1991 Federal Pay Adjustments		+8,000	
P.L. 93-638 Contractor Pay Cost Adjustments		+29,000	
Federal Employees Retirement System (FERS)		+29,000	
PROGRAM ADJUSTMENT:			
Columbia River		100,000	+100,000
FY 1991 REQUEST..................................		$6,454,000	$ -298,000

Minerals & Mining ($-111,000; FTE 0): The decrease of $111,000 results from the application of the Indian Priority System at the tribe/agency level.

	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$28,000	$23,000	-5,000
Anadarko Area	11,000	11,000	---
Billings Area	186,800	163,400	-23,400
Juneau Area	60,000	60,000	---
Muskogee Area	782,300	747,000	-35,300
Phoenix Area	138,100	134,900	-3,200
Albuquerque Area	155,000	110,800	-44,200
Navajo Area	180,000	180,100	+100
Portand Area	93,800	93,800	---
TOTAL TRIBAL PRIORITIES	$1,635,000	$1,524,000	$-111,000
ADJUSTMENTS:			
One additional workday		+4,000	
Adjustment for Administrative and Staffing Efficiencies		-21,000	
FY 1991 Federal Pay Adjustments		+17,000	
P.L. 93-638 Contractor Pay Cost Adjustments		+1,000	
Federal Employees Retirement System (FERS)		+90,000	
PROGRAM ADJUSTMENT:			
Base Transfer of Linowes Positions		+122,000	
FY 1991 REQUEST..................................		$1,737,000	$-111,000

Object Class Distribution - Natural Resources (Tribe/Agency Operations)

	FTE	Amount
Total Personnel Compensation...........................	+13	$+1,244,000
Personnel Benefits.....................................		+174,000
Other Services...		-2,650,000
Total..	+13	$-1,232,000

Activity Summary

(Dollar amounts in thousands)

Activity: Trust Responsibilities

Subactivity	FY 1989 Actual Approp.	FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Incr.(+) Decr.(-) From Base
Indian Rights Protection	16,041	16,743	16,515	16,905	17,560	+655
Real Estate/Financial Trust Services	19,262	20,112	19,839	20,380	26,248	+5,868
Tribe Agency Operations	23,495	23,930	23,606	24,420	24,281	-139
Total	58,798	60,785	59,960	61,705	68,089	+6,384

Justification of Program and Performance

Activity:	Trust Responsibilities
Subactivity:	Indian Rights Protection

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
A. Environmental Quality	$	1,066	1,051	1,064	3,614	+2,550
	(FTE)	(14)		(14)	(14)	(--)
B. Indian Rights Protection	$	15,677	15,464	15,841	13,946	-1,895
	(FTE)	(97)		(97)	(98)	(+1)
Total Requirements	$	16,743	16,515	16,905	17,560	+655
	(FTE)	(111)		(111)	(112)	(+1)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Indian Rights Protection	16,743	-228	16,515

This reduction will be accomplished through reduced travel, training and administrative costs associated with the central office and area office programs. There will be minimal impact on the Hazardous Waste, Litigation Support and Attorney Fees programs. Contracts that are awarded to conduct studies on the Hazardous waste sites are based on competitive bids received. Funds for the Litigation Support and Attorney Fees programs are determined and prioritized based on tribal applications received and on the resources available.

A. Environmental Quality Services

		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Area Office Operations	$	345	340	345	345	—
	(FTE)	(9)		(9)	(9)	(--)
Central Office Operations	$	221	218	219	219	--
	(FTE)	(5)		(5)	(5)	(--)
Hazardous Waste	$	500	493	500	3,050	+2,550
Total Environmental Quality Services	$	1,066	1,051	1,064	3,614	+2,550
	(FTE)	(14)		(14)	(14)	(--)

Objectives: The objectives of the Environmental Quality program are: (1) to ensure that proposed bureau actions affecting the reservation environment comply with procedural and substantive requirements of the National Environmental Policy Act (NEPA); (2) to review and comment on other federal agency NEPA documents for proposals that may have potential impacts on Indian people and trust lands; (3) to comply with environmental protection laws such as the Clean Air Act, the Clean Water Act, the Safe Drinking Water Act, the Resource Conservation and

Recovery Act (RCRA), the Comprehensive Environmental Response Compensation and Liability Act as amended (CERCLA), the Federal Insecticide, Fungicides and Rodentcide Act (FIFRA); (4) to comply with the National Historic Preservation Act, the Archeological Resources Protection Act and the American Indian Religious Freedom Act to protect Indian archeological, historic and cultural resources and values on Indian trust lands; and (5) to comply with Executive Order 12088 and applicable Departmental policies and procedures in the prevention, control and abatement of environmental pollution from federal facilities and activities under the control of the bureau.

Base Program ($1,064,000; FTE 14):

Area Office Operations ($345,000; FTE 9): Area office staff is primarily responsible for coordinating the preparation of environmental impact statements (EIS). This includes review and oversight on documents prepared by third party contractors. The staff is also responsible for scheduling public hearings and gatherings and responding to public comments on EIS documents. The area offices prepare most of the major environmental assessments (EA's) required under their jurisdictions and provide guidance to the tribe/agency level in the preparation of less controversial EA's. Area staff prepares permits and provides guidance for the completion of daily archeological activities and historic preservation compliance cases. Field work is performed to ensure compliance with archeological and historic preservation laws and protection of sites to the maximum extent possible. Emergency site discoveries are also handled at this level. The staff coordinates with regional EPA, IHS, HUD and other federal agency offices to ensure that environmental interests on Indian lands are met. This includes issues such as air and water quality and archeology.

Area office staff is also responsible for gathering information through questionnaire surveys concerning hazardous waste sites. Arrangements are made, on occasion, for soil and water tests of real or suspected sites. On-site coordinators duties are performed during spill response and cleanup situations. Area staff is responsible for the contracting of cleanup of the sites and testing for possible remedial action.

Central Office Operations ($219,000; FTE 5): The staff at this level (1) develops policy, performs oversight, monitors and evaluates the bureauwide environmental and hazardous waste programs; (2) provides guidance and assistance in solving problems associated with preparation of Environmental Impact Statements; (3) prepares and reviews Federal Register Notices; (4) provides coordination in cases involving joint leads with other Interior agencies to ensure that documents will meet the needs and requirements of each Agency; (5) reviews controversial Environmental Assessments; (6) gathers documents from federal and state agencies which may affect Indian lands and forwards them to the appropriate area office for review; and (7) obtains and consolidates comments from the field and forwards them to the agency that initiated the project. The staff is also responsible for overall guidance of the bureau's archeology and historic preservation program. This includes drafting policies and procedures for compliance with the various archeological and historic preservation laws and for archeological permitting, while taking the complex issues of tribal ownership and trust lands status into account. All major policy initiatives and coordination with other federal agencies are also generated at this level.

The central office staff works with federal agencies at the national level and state governments to ensure that environmental issues that arise on Indian lands are resolved. The staff develops policy and guidance for providing technical assistance to tribes in their efforts to obtain primacy for environmental programs such as air and water quality. Policy documents and guidance manuals are developed and maintained for spill prevention and response for use at bureau installations, and for determining the responsible entity for costs associated with spill incidents.

Workload Data: Environmental Impact Statements which are required of the bureau are usually prepared by consulting firms and cost approximately $400,000 each. Funding for impact statements is not included in this request since costs are borne by the project applicant or by the program responsible for management of the resources proposed for development.

Environmental work is also accomplished by other program staff. Efforts by staff of minerals, forestry, water and land resources and real estate, are required in preparation and review of environmental impact statements and assessments and in the review of documents prepared by other federal agencies. Funds for those activities are provided by those programs. The number of cases by category is as follows:

	FY 1989	FY 1990	FY 1991
Environmental Examinations	73,000	75,000	76,000
Environmental Assessments	1,100	1,300	1,500
Environmental Impact Statements..	5	6	6
Environmental Reviews	1,600	1,500	1,000

The bureau encourages tribes to carry out environmental programs on their respective reservations with assistance from the EPA and cooperating states. Guidance from BIA is provided through the area Environmental Quality staff.

Hazardous Waste ($500,000): From fiscal years 1986 through 1988, the bureau inventoried, tested, and conducted preliminary assessments (PA's) and site inspections (SI's) of 20 sites on six Indian reservations, of which four were determined to be high risk sites requiring remedial action. These sites are Masonite Mill Creek (Hoopa Valley Reservation, California); Kenwood dumps (Cherokee Nation, Oklahoma); Tulalip landfill (Tulalip Reservation, Washington); and Copper Bluff Mine (Hoopa Valley Reservation, California). These studies revealed the presence of trichlorethane, pesticide wastes and pentachlorophenol and were determined to be cancer causing chemicals.

Remedial Investigations/Feasibility Studies (RI/FS) are required in pre-remedial phase. Remedial Investigations define the exact nature and extent of contamination at each site, and the existing or potential human and environmental risk involved. Feasibility Studies (FS) screen and analyze the best available treatment and/or cleanup alternatives and identify the most feasible and cost-effective remedial action to restore sites to their pre-contamination state and protect the Indian population from imminent health risks.

During FY 1989, a contract was awarded to conduct a Remedial Investigation and Feasibility Study on the Masonite Mill site. In FY 1990, a contract will be awarded to conduct a RI/FS on the Kenwood dumps in Oklahoma. A comprehensive inventory of hazardous waste sites on Indian trust lands will also be conducted through remote sensing and photographic interpretation and a Geographic Information System (GIS) reconnaissance survey. This inventory may reveal the existence of additional uncontrolled hazardous waste sites for possible future inclusion in this program. In FY 1991, funds will be used to contract Remedial Investigation and Feasibility Studies on the Tulalip landfill and Copper Bluff Mine.

Change from FY 1991 Base: (Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	+/- Difference
Hazardous Waste	$	500	+3,050	+2,550

Hazardous Waste (+$2,550,000): Of the increase, $1,500,000 will be used to initiate remedial cleanup and restoration of the Masonite Mill site and/or the Kenwood dumps site. Preliminary assessments conducted on these sites revealed the presence of trichlorethane, pesticide wastes and pentachlorophenal, which have been determined to be cancer causing chemicals. The result of the Feasibility Studies on the Masonite Mill site and Kenwood dumps are expected to be known during FY 1990 which should provide recommendations for treatment and remedial cleanup alternatives.

The remainder of the increase ($1,050,000) will be used for studies and mitigation at Midnite Mine (Dawn Mine) on the Spokane Indian Reservation, Washington. The studies will be for the groundwater sampling, testing and monitoring to determine the extent of any pollutants reaching the groundwater in the area and to determine the path the area contaminated will follow. Monitoring wells will also be installed in order to alert BIA of the extent and degree of concentration of present and future groundwater pollution. This information is essential in the design of reclamation plans for the area.

Mitigation may involve the disposal of sludge generated from the treatment of the contaminated water through the use of a "cell" to be constructed to hold approximately 25,000 cubic yards of such contaminants or through a contract with the Spokane Tribe to use the existing Sherwood Mine holding facility. Final decisions regarding mitigation will be made pending completion of the studies referenced above. If constructed, the cell will be designed in accordance with EPA standards and will be cleared for use by EPA and NRC. Maximum containment and protection of groundwater is the goal.

B. Indian Rights Protection

		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc.(+) Dec.(-) From Base
Area Office Operations:	$	307	303	368	473	+105
	(FTE)	(5)		(5)	(6)	(+1)
Central Office Operations:	$	568	560	579	579	--
	(FTE)	(9)		(9)	(9)	(--)
Field Operations:						
ANILCA Programs	$	1,496	1,476	1,549	1,549	—
	(FTE)	(11)		(11)	(11)	(--)
ANCSA Historical Cem. Sites	$	1,106	1,091	1,150	1,150	—
	(FTE)	(29)		(29)	(29)	(--)
Litigation Support	$	2,180	2,150	2,180	1,180	-1,000
	(FTE)					

B. Indian Rights Protection Continued:

		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc.(+) Dec.(-) From Base
Water Rights Negotiation/ Litigation	$	6,853	6,760	6,853	6,853	—
Attorney Fees	$	2,000	1,973	2,000	1,000	-1,000
Unresolved Rights Issues	$	1,167	1,151	1,162	1,162	—
	(FTE)	(43)		(43)	(43)	(--)
Total Indian Rights Protection	$	15,677	15,464	15,841	13,946	-1,895
	(FTE)	(97)		(97)	(98)	(+1)

Objectives: To protect those rights which the United States guaranteed the various federally-recognized Indian tribes through treaty, statute or Executive order, and to preserve the resources upon which the exercise and benefits of the rights depend; to assist tribes in achieving involvement in the resolution of their rights; to address all unresolved issues, e.g., trespass, water rights, fishing and hunting rights, tribal sovereignty; and to bring parties together on a broad scale to consider Indian rights issues and seek areas of common interests and goals.

Base Program ($15,841,000; FTE 97): As the primary federal agency with fiduciary responsibilities for trust resources, the Bureau of Indian Affairs must meet whatever challenges may occur and initiate action necessary for the protection of Indian rights.

Many of the cases filed to date will be active in FY 1991 and will require research and evidence-gathering efforts. Unresolved Indian Rights issues will continually be identified and resolved, and evidence will be gathered for Statute of Limitations active claims for many years to come until the claims are resolved. Within the Federal Government, in addition to the Bureau of Indian Affairs, the Department of the Interior's Solicitor and the Department of Justice both have key roles in Indian rights protection. The Department of Justice usually represents the Indian interest in cases under adjudication. The Interior Solicitor provides legal advice to the bureau and to tribes concerning rights issues and prepares litigation reports for consideration by the Department of Justice. If the Federal Government were to withdraw funds for rights protection efforts, few tribes would be able to afford the extremely high costs of litigation or negotiation, and would risk immediate loss of their trust resources.

Area Office Operations ($368,000; FTE 5): This element provides the bureau with problem-solving staff and technical support services at the area office level for the protection of the multi-billion dollar estate which the United States administers on behalf of the Nation's Indian tribes. This effort includes support to meet challenges to protect tribal rights and interests, as well as the initiation of actions required to clarify the nature, and to ensure the continued viability of those rights. Where negotiated agreements are not possible, this activity provides the historical, technical, scientific, and other professional expertise necessary for the government to litigate challenges to Indian rights.

Central Office Staff Operations ($579,000; FTE 9): This element provides the bureau with professional, technical and managerial personnel to administer rights protection activities at the national level. This includes the development of policy initiatives; the oversight and evaluation of rights protection programs at the area and agency level for compliance with policy, regulations, and guidelines; the facilitation of rights protection issues that involve other federal agencies; provisions of definitive sources of information on procedures and policy to field staff and Indian tribes; initiation and review of legislation; allocation determinations for centrally controlled rights protection funds; and issuance and monitoring of contracts for rights protection research on a regional or national basis.

Field Operations ($14,894,000; FTE 83): The major costs for services required in the protection of Indian rights are funded in the subactivities listed below: Other Litigation Support and General Rights Matters, Water Rights Negotiation/Litigation, Attorneys Fees, Unresolved Indian Rights Issues/Statute of Limitations, and Alaska programs. These subactivities are programmed at the central office based on information provided by the tribes, agencies and area offices. Funds are made available on a priority basis which considers the relative importance and urgency of the controversy being negotiated, litigated, or researched.

Alaska Lands Act ($2,699,000; FTE 40): This funding provides for implementation of those activities authorized by the Alaska Native Claims Settlement Act (ANCSA), P.L. 92-203, as amended, and the Alaska National Interest Lands Conservation Act (ANILCA), P.L. 96-487.

(a) ANILCA Programs ($1,549,000; FTE 11): This program provides for limited coordination and consultation with land managing agencies and the state on subsistence preference for Alaska Natives, and administration of programs affecting Native allotments.

Subsistence: Provision of subsistence is minimally monitored to determine the preservation of rights, resources, immunities, priorities and prerogatives to which the United States has committed itself by various statutes and regulations. Complaints that preference for subsistence users is not adequately provided are investigated. This effort includes development of memoranda of understanding with land resources management agencies (State of Alaska, BLM, NPS, USFS, FWS) to ensure that subsistence provisions are included, that subsistence users have input, and that subsistence is given priority over other uses if the resources are being diminished. Funding for very limited cooperative studies with the State of Alaska, other agencies and Native organizations is included. Limited assistance to Native users is contemplated, to allow their input via the Marine Mammal Commission, Eskimo Walrus Commission, Eskimo Whaling Commission, Title VIII of ANILCA advisory councils, and resource commissions.

Allotments: The bureau is charged with the responsibility to assist Alaskan Natives to acquire title to the lands they use and occupy. The critical and complex issues to be resolved (e.g., overlapping selection boundaries, conflicting boundaries, determination of heirs, approval of relinquishments, easement location and approval, trespasses, etc.) hinge on an organized approach to resolution, in order to avoid more lengthy court cases and delays in settling the land claims of ANCSA corporations, the State of Alaska, other federal agencies, and private citizens. Approximately 4,200 parcels within 2,800 applications are still pending before the Department, with many years of research, review, and resolution work to be accomplished before the allotment lands or surrounding lands can be adjudicated, surveyed, and conveyed. Another critical aspect in final conveyance of allotments is the extensive survey work that is required, funding for which is included in the Bureau of Land Management budget.

A Native Allotment project plan has been developed by the Juneau Area Office which is intended to facilitate and expedite conveyance of all Native allotments in Alaska through a coordinated, cooperative inter/intra-agency six-year plan of action. Actions are being taken to the degree possible, within existing resources, to eliminate the conveyance backlog that is impeding compliance with the settlement laws. The Native Allotment applications (which include 1 to 4 parcels) must be adjudicated and conveyed or denied, before surrounding titles can be finalized and acreage determined. This work is being done in conjunction with the Bureau of Land Management's plan to establish a priority for Native Allotment work, with the goal of completing them all this century. In addition, limited technical services to supplement the ongoing real estate services and trust resources services to fulfill the trust responsibility for Native allotments is also provided, upon request or as required, in high priority areas of development needs, e.g., title records and status, rights-of-way, leases, land transfer, probates, environmental, archeological, natural resources, forestry and appraisals.

(b) ANCSA Historical and Cemetery Site Investigations ($1,150,000; FTE 29): This funding provides field support units for investigation and certification of cemetery sites and historical places authorized by the Alaska Native Claims Settlement Act (ANCSA). Historical and cemetery sites for conveyance to Regional corporations under the ANCSA are protected under existing laws until investigations and surveys are accomplished in these remote areas. As most of the sites are accessible only by helicopter, travel is an integral part of the ANCSA program, absorbing about 1/3 of the annual funding requirements. The use of large field support units, which was an efficiency measure in past years, will not work in many instances now, because the remaining sites are too scattered. At the base funding level, the bureau estimates that approximately 100 sites could be located and additional information gathered and verified. Reports could also be written and eligibility determinations made on 250 previously investigated sites. At the start of FY 1991, it is estimated that there will be about 150 sites remaining to be field investigated, and about 500 reports left to be completed. This estimate is dependent upon the final number of Athna sites to complete. At this funding level, completion of the field work will occur by the end of FY 1993, with report writing, appeals, and other ANCSA administrative work continuing for a minimum of three fiscal years (unless the unusual logistics of the Aleut sites prove more difficult than anticipated).

Litigation Support ($2,180,000;): This activity provides the information and evidence-gathering capability required by the United States to successfully defend the government's position in litigation involving Indian rights issues, excluding specific water rights issues being addressed within the Water Rights/Negotiation/Litigation program. In some instances, the United States is suing in actions brought on its own behalf or on behalf of the Indian tribes. In other cases, the United States is a named defendant in actions brought by third parties; and in others, it is a named defendant in actions brought against the United States by Indian tribes.

Litigation support is also provided to the tribes in cases where they are separately represented because other interests of the United States conflict with those of the affected tribe. In such cases, a trust relationship or fiduciary obligation still exists. Much of the activity conducted in support of litigation is actually directed towards negotiated settlement of lawsuits. Cases include: (1) trespass; (2) title questions, such as property line disputes; (3) rights-of-way; (4) allotment claims; (5) mineral entry; (6) pollution issues; and (7) activities which have harmed or could harm the health and safety of the reservation population.

These funds may also be used for other rights protection matters that do not fall specifically within the above categories, such as general legal services to Alaska Natives, payment of settlements directed by the Courts or by the Department of Justice and Interior Solicitors, and to avoid litigation. Based upon applications submitted by tribes, cases are addressed on a priority basis with those in active litigation and/or negotiation receiving first priority.

This program includes the FY 1990 Congressional add-ons of $150,000 for the Arkansas Riverbed Authority for litigation costs associated with the identification and removal of trespassers from the Arkansas Riverbed; $300,000 for for management planning, research, and other expenses of the Shoshone-Bannock Tribes for litigation to appeal the decision, U.S. v. Oregon; $250,000 for costs associated with studies to define the technology for dam removal and restoration to allow the Lower Elwha Tribe to intervene in dam relicensing procedures on the Lower Elwha River; and $300,000 to restore the FY 1990 program to the FY 1989 level.

Water Rights Negotiation/Litigation ($6,853,000): It is the Department's policy to negotiate settlements of Indian water claims whenever it is feasible to do so. This policy is based in part on (1) the fact that negotiated settlements cost less to prepare in comparison to the higher cost of protracted litigation, (2) the principle that negotiated settlements result in lasting local stability due to the amicable environment created by the negotiation process, and (3) because negotiating parties can fashion creative remedies which are not available to courts of law. Entering FY 1991, it is anticipated that there will be approximately 15 active ongoing negotiations.

Notwithstanding the desirability of negotiation, it is recognized that not all negotiable issues lead to acceptable settlements; therefore, claims preparations must also include preparations for the prosecution of Indian claims through litigation. It is anticipated that there will be approximately the same number of ongoing cases in active litigation and in negotiations (15). If the United States fails to adequately prepare claims, there would be a substantial risk that reservation water entitlements would be diminished, thus giving rise to the potential for breach of trust actions by beneficiary tribes.

Costs for claim preparations vary, and estimates for data/evidence collection are made by the bureau following consultation with affected Indian tribes, Interior Department Solicitors, and Department of Justice attorneys. Bureau funding priorities are: (1) cases in deliberation; (2) cases anticipated to be deliberated in FY 1992 and FY 1993; (3) cases anticipated to be deliberated in FY 1994 and FY 1995; and (4) cases where tribes may be prosecuting water rights claims on their own behalf.

As a point of reference, the anticipated FY 1991 negotiation and litigation activities are among over 60 pending stream adjudications in which Indian water rights are being determined. Most of the adjudications impact more than one tribe. Virtually all negotiations of Indian water rights are occurring in the context of either pending or anticipated litigation. Collection of data/evidence is usually directed by the United States, and will be consistent with the President's 10-year plan for Review of Indian Water Rights Claims, August 1980. This plan will be revised by August 1990.

Attorney Fees ($2,000,000): Decisions of the Comptroller General and Court of Appeals for the 10th Circuit have ruled that it is appropriate to expend federally appropriated funds to enable a tribe to retain independent counsel in situations in which the United States cannot represent the tribes as contemplated by 25 U.S.C. 175, or where separate representation is required due to inherent conflicts of interest because the United States is representing its own proprietary interests, or because several tribes with conflicting interests are involved in the same case. Regulations that govern the expenditure of appropriated funds for the fees of private attorneys representing tribes in cases being litigated or where the tribe is initiating litigation are in 25 CFR part 89. Bureau policy determines the hourly rates to be paid for the attorney fees.

The policy guidelines determining priority classification of eligibility for attorney fee funding are as follows:

(1) Cases where a tribe is sued directly and must defend its immunity from suit, as well as on the merits, and the Attorney General declines to defend the tribe.

(2) In the event that the United States is sued and a tribe's (or tribes') rights and interests (e.g., Winters' rights) are challenged by the action and, in addition, other identified interests of the United States (BOR, BLM, etc.) or the rights and interests of another tribe conflict with those of the affected tribe.

(3) In the event that the actions (or inactions) of another party detrimentally affect the rights and interests of a tribe, and the Attorney General declines to bring suit to enjoin such action, thus forcing the affected tribe to bring suit to protect its rights and interests.

Additional funds were provided in FY 1990 for litigation related to the Navajo-Hopi dispute and for the San Juan Southern Paiute.

All attorney fee requests are reviewed and evaluated with 25 CFR part 89.

Unresolved Indian Rights Issues/Statute of Limitations ($1,162,000; FTE 43): This activity provides for the field investigations and research requisite to the timely identification and resolution of issues necessary for the protection and preservation of Indian rights associated primarily with natural resources. In addition, the Statute of Limitations (28 U.S.C. 2415) activity, which originally concentrated on the identification, research, and filing of potential claims for money damages against third parties arising from actions taking place prior to 1966, now centers on the resolution of Statute of Limitations claims, including viable post-1966 claims that the bureau continues to identify.

The United States is now barred from filing suit to recover damages associated with any additional pre-1966 damage claims. With respect to those pre-1966 identified claims that have been published in the Federal Register, the Statute of Limitations is extended until such time as the United States files litigation, formally rejects the claims for litigation or legislative resolution, or submits legislation to the Congress to resolve such claims. With respect to damage claims arising after July 18, 1966, the United States may recover only those damages accruing during the six years and ninety days previous to the date on which suit is filed.

This joint activity is designed to protect Indian rights and to avoid government liability for failure to discharge the fiduciary responsibilities of the United States. Information is used primarily to seek and obtain negotiated settlements or other administrative remedies. Failing these remedies, funds can be used to support the initiation of litigation and for legislative resolution. The issues addressed include, but are not limited to, those involving title to land, trespass, water rights, mineral entry, renewable resources, problems of pollution, and activities which endanger trust or restricted property.

Changes from FY 1990 Base:

		FY 1991 Base	FY 1991 Estimate	Difference (+ or -)
Area Office Operations	$	368	473	+105
	FTE	(5)	(6)	(+1)
Litigation Support	$	2,180	1,180	-1,000
Attorney Fees	$	2,000	1,000	-1,000
Total	$	4,548	2,653	-1,895
	FTE	(5)	(6)	(+1)

Area Office Operations (+$105,000; FTE +1): The change results from the application of the Indian Priority System at the area level. Changes by area are as follows:

Area Office	FY 1990 Enacted	FY 1991 Request	Difference
Juneau Area	$ 113,000	$ 113,000	$ ---
Minneapolis Area	46,000	46,000	---
Muskogee Area	51,000	52,000	+1,000
Sacramento Area	43,000	43,000	---
Navajo Area	0	104,000	+104,000
Portland Area	54,000	54,000	---
TOTAL AREA PRIORITIES	$ 307,000	$ 412,000	$ +105,000
ADJUSTMENTS:			
One additional workday		+1,000	
Adjustment for Administrative Staffing Efficiencies		-3,000	
FY 1991 Federal Pay Adjustments		+2,000	
Federal Employees Retirement System (FERS)		+61,000	
FY 1991 REQUEST....................................		$ 473,000	

Litigation Support (-$1,000,000): Additional funds that were provided for the Arkansas Riverbed Authority, the Lower Elwha Tribe, the Shoshone-Bannock Tribes and to restore the FY 1989 level of funding for FY 1990 will no longer be required. Funding for those tribes identified above was accomplished in FY 1990. It is anticipated that the majority of tribal needs for litigation support can be accomplished within the amount proposed for FY 1991.

Attorney Fees (-$1,000,000): Additional funds that were provided in FY 1990 to meet authorized purposes for litigation related to the Navajo-Hopi boundary dispute and for the San Juan Southern Paiutes was accomplished in FY 1990. Funds that were provided to restore the FY 1990 level of funding to the FY 1989 level will not be required for FY 1991 as the critical review and screening of requests for attorney fees will continue, and allocations for attorney fees are made according to the limitation on hourly rates.

Object Class Distribution - Indian Rights Protection

	FTE	Amount
Personnel Compensation	+1	$+138,000
Personnel Benefits		+19,000
Travel		+10,000
Communications and Utilities		+8,000
Printing and Reproduction		+5,000
Supplies and Materials		+15,000
Equipment		+20,000
Other Services		$+440,000
Total		$+655,000

Justification of Program and Performance

Activity: Trust Responsibilities
Subactivity: Real Estate/Financial Trust Services

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
A. Trust Services, General	$	1,001	987	1,008	1,072	+64
	(FTE)	(20)		(20)	(20)	(—)
B. Real Estate Services	$	10,129	9,992	10,257	13,281	+3,024
	(FTE)	(202)		(202)	(194)	(-8)
C. Financial Trust Services	$	8,982	8,860	9,115	11,895	+2,780
	(FTE)	(151)		(151)	(171)	(+20)
Total Requirements	$	20,112	19,839	20,380	26,248	+5,868
	(FTE)	(373)		(373)	(385)	(+12)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Real Estate/Financial Trust Services	20,112	-273	19,839

Reductions in the Real Estate Services program will be accomplished by reductions in travel, training and administrative costs associated with various real estate programs; a reduction in numbers of "on-site" lease compliance inspections that can be made; postponement of a title and recordation law training class; and reductions in national coordination and evaluation meetings for the Land Titles and Records offices.

A. Trust Services, General

		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Area Office Operations:	$	654	645	661	725	+64
	(FTE)	(13)		(13)	(13)	(—)
Central Office Operations:	$	347	342	347	347	--
	(FTE)	(7)		(7)	(7)	(—)
Total Trust Services, General	$	1,001	987	1,008	1,072	+64
	(FTE)	(20)		(20)	(20)	(--)

Objectives: The objective of this program is to manage and direct the implementation of the Trust, Economic Development, and Natural Resource programs to protect, manage, and develop Indian and tribal resources in cooperation with tribal governments within the philosophy of self-determination as defined by law.

Base Program ($1,008,000; FTE 20):

Area Office Operations ($661,000; FTE 13): In the area offices, funds are used for Rights Protection staff, studies, contracts, geographic information system agreements, and other services that affect trust responsibilities programs at field offices.

Central Office Operations ($347,000; FTE 7): The Office of Trust and Economic Development provides staff support to the Deputy Assistant Secretary - Indian Affairs (Operations) in the development and management of bureau programs associated with Indian trust resources, including: water; agriculture; range; energy and minerals; forestry; fish, wildlife and recreation resources; real property management; financial trust services; financial assistance; economic development; transportation systems; environmental quality; investment of Indian trust funds; and, Indian rights protection. The bureau's trust responsibilities include: the protection of the rights of Indians in their trust property and those rights affecting trust property that are afforded by tribal sovereignty; exercise of the authorities delegated by the Secretary of the Interior concerning Indian trust property; providing to Indians the services necessary for them to make decisions required of them in the development of their resources; and administration of those programs designed to facilitate the trust. The Office of Trust and Economic Development plans, develops, monitors, and evaluates programs, policies, standards, procedures, and feedback systems for its assigned programs; participates in the allocation of bureau resources for respective program operations; and makes recommendations to the Deputy Assistant Secretary - Indian Affairs (Operations) for the necessary changes or adjustments in the programs and in their implementation. The office and its subordinate divisions also provide the development and coordination of training policies, programs and technical assistance support for its assigned programs.

Changes from FY 1991 Base:

(Dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference (+ or -)
Area Office Operations	661	725	+64

Area Office Operations ($+64,000): The change results from the application of the Indian Priority System at the area level. Changes by area are as follows:

Area Office	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$ 90,000	$ 100,000	$ +10,000
Anadarko Area	77,000	77,000	---
Billings Area	60,000	60,000	---
Juneau Area	161,000	129,000	-32,000
Minneapolis Area	87,000	87,000	---
Muskogee Area	94,000	103,000	+9,000
Albuquerque Area	0	77,000	+77,000
Eastern Area	85,000	85,000	---
TOTAL AREA PRIORITIES	$ 654,000	$ 718,000	$+64,000

	FY 1990 Enacted	FY 1991 Request	Difference
ADJUSTMENTS:			
One additional Work day		$ +2,000	
Adjustment for Improved Administrative & Staffing Efficiencies		-6,000	
FY 1991 Federal Pay Adjustments		+5,000	
Federal Employee Retirement System (FERS)		+6,000	
FY 1991 REQUEST..................................		$ 725,000	$+64,000

B. Real Estate Services

		FY 1990 Enacted Budget	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Area Office Operations:	$ (FTE)	3,087 (112)	3,045	3,108 (112)	2,784 (101)	-324 (-11)
Central Office Operations:	$ (FTE)	912 (17)	900	918 (17)	1,368 (20)	+450 (+3)
Field Operations:						
Cadastral Surveys	$	1,937	1,911	1,937	1,662	-275
Lease Compliance	$ (FTE)	1,178 (73)	1,162	1,279 (73)	1,279 (73)	-- (--)
Land Records Improvement	$	1,500	1,480	1,500	1,382	-118
Land Titles & Records Offices	$	1,515	1,494	1,515	3,806	+2,291
Probate Backlog Reduction	$	--	---	--	1,000	+1,000
Total Real Estate Services	$ (FTE)	10,129 (202)	9,992	10,257 (202)	13,281 (194)	+3,024 (-8)

Objectives: To protect and enhance the corpus of the Indian trust estate by providing both individual Indian landowners and Indian tribes with the professional, technical, administrative, and protective services required of the United States in its role as trustee of Indian-owned real property; to work with the Indian tribes, Congress, and other interested parties toward resolution of the undivided heirship problem of allotted Indian land in compliance with existing authorities; to provide assistance in land use planning and resource management planning to those tribal entities which have requested and demonstrated a need for these services; and to facilitate economic use of land by developing a capability to provide accurate and timely land ownership information and boundary delineation.

Base Program ($10,257,000; FTE 202):

Area Office Operations ($3,108,000; FTE 112): The area offices provide technical support, general policy direction and oversight, as well as administrative review and evaluation of agency real property management services. Technical support services include appeals assistance, review of development initiatives, performance of appraisals, and land use planning.

Central Office Operations ($918,000; FTE 17): Central office staff formulate Real Estate Services policy; perform oversight review and evaluation of area-wide real estate functions; handle appeals; perform title research required at the national level; provide budget services; implement training initiatives; produce directives for implementation of new legislation; and establish and review regulations governing the operation of the Bureau's Real Estate Services Program.

Field Operations ($6,231,000; FTE 73):

a. Cadastral Surveys, Lower 48 States ($1,937,000): Cadastral surveys of Indian lands must be accomplished by the Bureau of Land Management (BLM) pursuant to 25 U.S.C. 176. The program is directed toward accomplishing priority surveys identified by the tribes and the BIA, particularly in the areas of mineral resource development and land use planning where the lack of correctly identified boundaries constrains effective management and/or development of resources. Survey priorities are developed based on the following criteria: beneficiary, economic return, need, contribution, and purpose. Approximately 2,500 miles of Indian boundaries were surveyed by BLM in each of the last five years.

The 1987 Interagency Agreement between BIA and BLM established programmatic requirements for both agencies, and encourages the development of supplemental "project office" agreements and contributions to accomplish surveys. A "project office" is a temporary BLM organization, established for a minimum period of time (usually three years) to survey a specific (and usually large) area of land. The BIA realizes significant administrative cost savings by not having to pay per diem and travel costs for BLM's project office surveyors. As such, project offices combine the most effective method of accomplishing surveys and the most efficient fund utilization. Four current project offices will continue operations in FY 1991; these are located on the Navajo and Southern Ute Indian Reservations, at Muskogee, Oklahoma to survey Arkansas Riverbed land owned by the Cherokee, Chickasaw, and Choctaw Tribes of Oklahoma, and at the Olympic Peninsula Agency in the State of Washington. In FY 1990 a Congressonal add-on of $400,000 was provided to expedite the completion of cadastral surveys on 96 miles of the Arkansas Riverbed, the surveys are being accomplished through the interagency agreement with BLM. The project office at White Earth will be reviewed during FY 1990 and either renewed or terminated.

Further efforts to increase the efficiency of program operations will result in a portion of the FY 1991 funding being dedicated to the surveying of exterior reservation boundaries abutting lands managed by other federal agencies. In FY 1991, the Bureau of Reclamation (BOR) and the National Park Service (NPS) will continue to share survey costs of certain common boundaries between BOR and NPS and Indian Lands initiated in FY 1991; BIA's share of these costs will be approximately $140,000. It is BIA's position that development of such cost-saving agreements should be encouraged.

b. Lease Compliance ($1,279,000; FTE 73): The Bureau of Indian Affairs administers more than 60,000 leases of trust and restricted Indian lands. The resources allocated to this activity are used to ensure that the lessees and their assignees comply with the terms of their leases. Lease compliance personnel, together with Realty, Land Operations, Forestry, and other agency-level staff, initiate field inspections and administrative actions, as needed, to assure that the Indian landowners' property rights are protected. Lease violations are noted, and corrective actions or cancellations are completed where appropriate. For example, the bureau may employ a professional contractor to audit a commercial lessee's accounts, or it may independently investigate an agricultural lessee's fencing and cropping patterns.

Interagency and inter-departmental coordination will be improved in FY 1991, to ensure that program funds are utilized efficiently. Automated data systems will be used to facilitate the collection and disbursement of lease rentals in a timely manner, and lease compliance efforts will be intensified in those geographical areas where leasing activity has increased in recent years. In many cases, lease compliance activities will result in the recovery of funds for the Indian landowners, through the collection of late payment penalties, damages, or bond forfeitures.

In allocating program resources, priority is generally given to activities involving oil and gas, mining, industrial, business, cultural, and other income-producing leases; however, many of the bureau's lease compliance priorities may also be dictated by tribal priorities. Approximately 20 percent of the leases administered by the bureau expire each year, and actions needed to renew these leases (or re-lease the subject properties) are also given priority. New planning, reporting, and monitoring requirements will be established by FY 1991, to ensure that program funds are allocated in a manner which will address these priorities and minimize the economic loss resulting from non-compliance.

c. Lands Records Improvement ($1,500,000): The objective of the Land Records Improvement Program is the completion of the bureau's land records (including title and encumbrance documents; land, title and ownership data systems; archive microfilm and imaging of title documents; and cartographic and geographic maps and data systems). This program will continue land title examination, verification, and maintenance by bureau titles and records offices, agencies and contract personnel. These funds provide for the completion of the title update and date verification on the land records data systems by the Aberdeen, Anadarko, Albuquerque, Billings and Portland Offices; and will continue the project initiated in FY 1989 to conduct identification, title documentation, examination and data entry on all trust and restricted tracts under the jurisdiction of the bureau's title service offices at Eastern, Juneau and Muskogee and to upgrade those offices to a fully functional and operational status.

Consistent with the Integrated Records Management System and Land Records Information System Implementation Plans, the bureau is continuing major Land Records Improvement projects begun during prior fiscal years: (1) recordation and entry into the Land Records Information System (LRIS) of unrecorded title and encumbrance documents; (2) the completion of Land Status Maps and geographic data systems and the performance of protraction surveys on an estimated 15 million acres of unsurveyed trust and restricted land for the creation of approximately 20,000 tracts for entry into LRIS; and (3) the reautomation of the Land Titles and Records Offices to replace old, defective and incompatible equipment and application programs. The successful completion of the bureau's land records data base is directly related to the completion of these Land Records Improvement projects which is a high priority within the bureau.

Land ownership and title information is the basic necessity for many essential bureau program activities. The program provides information for use by the bureau's computer systems and by leasing activities within other programs such as forestry, agriculture, range, administration, minerals, and others. Correct and current ownership and title status information is critical in obtaining owner consent and in accounting for and distributing owner income. It is utilized by many programs, including oil and gas leasing and royalty management; and it is essential to the proper accomplishment of probate activities and estate distributions.

d. Land Titles and Records Offices ($1,515,000): The goal and objective of the Land Titles and Records program is to provide complete, accurate and efficient title service to the Indian tribal and individual owners of trust and restricted Indian lands and to the bureau offices and data systems which rely on Land Titles and Records data reports. The principal work products of the program are the certified title reports (e.g., Title Status Report) and maps (e.g., Land Status Maps) issued by the program offices. The work product objectives of the program are to improve the productivity of the title examination process (as indicated by the issuance of Title Status Reports) by 10 percent based on the FY 1989 bureauwide rate of 4 man-hours per title examination.

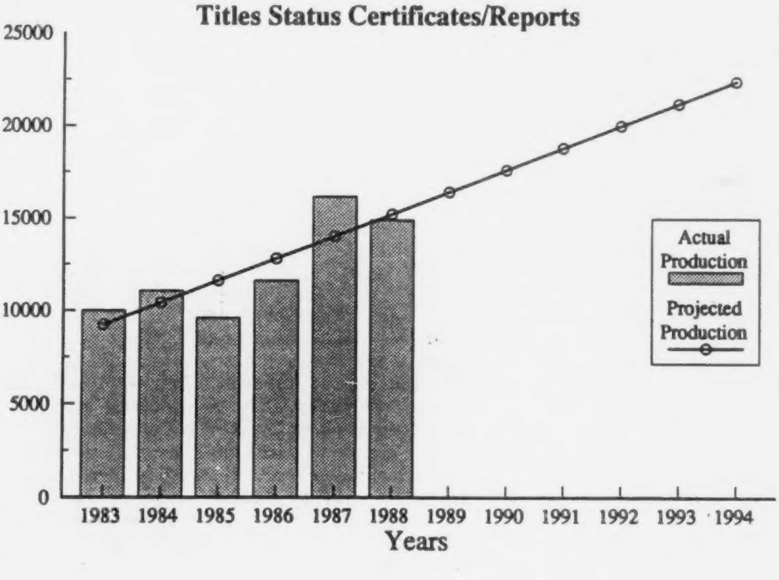
The Land Titles and Records program consists of three fundamental functions: (1) recordation of title documents, (2) title examination and quality control services, and (3) maintenance of land status maps and geographic data. "Recordation" involves the acceptance of title documents; the extraction, entry, notation and maintenance, of recording and title document images; and the examination of title documents for title defects. The "title examination and quality control" function provides complete title service including title examination, certification and reports under the Torrens System of title to Indian tribes and individual allottees, to governmental offices, and to private industry. The "land status mapping and geographic data" function involves the complete and accurate maintenance of reservation-wide maps and component segment sheets, and, beginning in FY 1991, the extraction, entry and maintenance of land, title and ownership geographic data on the bureau's Geographic Information System (GIS).

The bureau has five Titles and Records Offices and three Title Services Offices at eight area offices, covering land records for twelve areas. Each office is responsible for many activities beyond the receiving, recording and computer data entry of land records information. The offices provide services necessary for the bureau to carry out its management responsibilities on almost 53 million acres of trust land. The titles and records staff performs functions analogous to those of a county recording office as an official office of record, in that deeds, probates, liens, mortgages, and similar documents are recorded and certified copies issued. In the bureau, there are 28 types of title documents, each utilizing five procedural steps that must be completed before a document is recorded and entered into LRIS.

The offices function as abstract companies in that they provide copies or records in a chain (or abstract) of title, and furnish opinions regarding ownership and sufficiency of title documents; they also provide land status maps. Most importantly, the offices function as title companies, in that they verify and certify title ownership and encumbrances for all Indian lands. They also provide land use maps, heirship data, BIA historical or archive title documents, and property income data. Records must be kept for each trust or restricted ownership tract as well as separate records on two million ownership interests.

This program is actively involved in the redesign of the Land Records Information System, the Integrated Records Management System, and the bureau's other land records data systems, to form a single, unified data management system providing bureauwide access to land, ownership and document data. The unification of these separate land records data systems requires the conversion and reconciliation of land records data contained in each system to a single new data base structure which is universally compatible with and accessible by all bureau offices and computer systems. Data reconciliation and maintenance will be performed by the Land Titles and Records Offices and Title Service Offices for land title and records data, and by area and agency offices for all other data. The reconciliation of land records data and the establishment of a unified land records management system are essential to the bureau and to the Indian individuals and tribes it serves.

Using the examination of title to Indian lands and the certification and issuance of Title Status Reports (TSRs) as one measure of the Land Titles and Records Program's workload, the following chart indicates the program's actual production from 1983 through 1988, and the program's projected production workload for 1989-1994. As depicted in the chart, the program has a projected 7.6% annual increase in its normal production workload based on the program's last 6 years of production history.



Changes from FY 1991 Base:

(Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	Difference (+ or -)
Area Office Operations	$	3,108	2,784	-324
	FTE	(112)	(101)	(-11)
Central Office Operations	$	918	1,368	+450
	FTE	(17)	(20)	(+3)
Field Operations:				
Cadastral Surveys	$	1,937	1,662	-275
Land Records Improvement	$	1,500	1,382	-118
Land Title & Records Offices	$	1,515	3,806	+2,291
Probate Backlog Reduction	$	--	1,000	+1,000
Total	$	8,978	12,002	+3,024
	FTE	(102)	(68)	(-34)

Area Office Operations (-$324,000; FTE -11): The change results from the application of the Indian Priority System at the area level. Changes by area are as follows:

Area Office	FY 1990 Enacted	FY 1990 Request	Difference
Aberdeen Area	$ 456,000	$ 437,000	$ -19,000
Anadarko Area	341,000	341,000	---
Billings Area	301,000	257,000	-44,000
Juneau Area	227,000	151,000	-76,000
Minneapolis Area	99,000	99,000	---
Muskogee Area	132,000	132,000	---
Phoenix Area	372,000	358,000	-14,000
Sacramento Area	155,000	155,000	---
Albuquerque Area	171,000	83,000	-88,000
Navajo Area	489,000	406,000	-83,000
Portland Area	307,000	307,000	---
Eastern Area	37,000	37,000	---
TOTAL AREA PRIORITIES	$ 3,087,000	$ 2,763,000	$ -324,000
ADJUSTMENTS:			
One additional Work day		7,000	
Adjustment for Improved Administrative & Staffing Efficiencies		-60,000	
FY 1991 Federal Pay Adjustments		48,000	
Federal Employee Retirement System (FERS)		26,000	
FY 1991 REQUEST		$ 2,784,000	$ -324,000

Central Office Operations (+$450,000; FTE +3): The increase is due to a transfer of funds from the Land Records Improvement program in the amount of $118,000 to cover personnel and administrative costs for the Branch of Land Titles and Records. This transfer of funds is to further affect the consolidation of realty functions started in FY 1990.

Additionally, $332,000 is being transferred from the Energy and Minerals program to fund the new Real Estate Services Branch of Oil and Gas Lease Administration. This Branch will direct and monitor the following activities relative to the administration of approximately 16,000 oil and gas leases and distribution of lease income to Indian tribes and individual Indians: (1) the approval of leases, assignments, unit agreements, surety bonds, etc.; (2) the advertisement and conduct of lease sales; (3) the completion/review of environmental assessments and the cancellation of leases for due cause; (4) the collection and disbursement of rents and royalties paid on producing leases; and (6) oil and gas lease quality control and program evaluation. The branch will also coordinate lease compliance activities conducted by the Bureau of Land Management, monitor royalty accounting by the Minerals Management Service, and process appeals by the Office of Hearings and Appeals.

The $332,000 increase is offset by: (1) a decrease of $132,000 in the Minerals and Mining, Special Projects Program for the transfer of the management of oil and gas leases and automated royalty distribution quality control functions to the Division of Real Estate Services, and (2) a decrease of $200,000 in the Minerals and Mining, Minerals Assessments Program based on the completion of Phase I mineral inventories.

The increase of three FTE is for the purpose of staffing the new Branch of Oil and Gas Lease Administration. The new positions will consist of two technical positions and one clerical position.

Cadastral Surveys (-$275,000): The change to base is the result of a decrease of a one-time, supplemental appropriation of $400,000 provided by Congress in FY 1990 to accelerate the pace of cadastral surveys on the Arkansas Riverbed; and an increase of $125,000 to establish a cadastral survey presence on the River on a year-around basis. Annual funding of $125,000 is projected to remain in effect for three years.

Land Records Improvement (-$118,000): The decrease represents funding for personnel and administrative costs for the Branch of Land Titles and Records within Real Estate Services, Central Office Operations. The change is representative of the consolidation of the real estate services function initiated in FY 1990.

Land Titles and Records Offices (+$2,291,000): This change is made to accurately reflect the actual operating costs of the program, which in previous years was funded by the Land Records Improvement Program. The increase will be used for actual personnel and operating expenses of the Bureau's five Land Titles and Records Offices to provide the ability to properly manage the recordation and maintenance of all title documents, lease and ownership records on Indian lands, and to provide quality control for the distribution of income from Indian trust land to tribes and individuals. The FTE associated with the Land Titles and Records Improvement Program are reflected in Real Estate Services, Area Office Operations.

Probate Backlog Reductions (+$1,000,000): In order to make all IRMS ownership files current, it is essential that all estates involving Indian trust and restricted property be probated in a timely fashion (25 U.S.C. 372; 43 CFR 4.200). Reports indicate that the current BIA backlog of such identified estates, which are in need of research and compilation of data for transmittal to probate judges in the Department's Office of Hearings and Appeals, is estimated at 4,800. (This figure does not include any estates which may subsequently be identified through the probate of these cases, nor does it include any probate modification and summary distribution backlogs that now exist nationwide. This figure also does not include an estimated backlog of 5,000 restricted estates, within the Muskogee Area Office jurisdiction, that fall outside of the specific BIA responsibilities set forth in 43 CFR 4.200, but within the general and discretionary responsibilities set forth in 25 CFR 16 and 17.) Out of 68 field offices responsible for estate administration, there are 24 that have backlogs in excess of 50 estates; of these, 13 have in excess of 100 estates and 6 have in excess of 200 estates. Assuming that in probating the 4,800 identified estates, an estimated 2,400 additional estates will be identified, the total number of estates now pending in the Bureau of Indian Affairs stands at approximately 7,200. The funding will be used to contract the program under the authority of the Buy Indian Act or P.L. 93-638, or to hire temporary staff necessary to bring the probate backlog up to date. If temporary staff is required, this would consist of approximately 20 FTE.

C. Financial Trust Services

		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc.(+) Dec. (-) From Base
Central Office Operations	$	1,511	1,490	1,550	3,800	+2,250
	(FTE)	(22)		(22)	(42)	(+20)
Trust Fund Contract	$	3,703	3,653	3,703	4,233	+530
Field Operations:						
Field Staff:	$	3,768	3,717	3,862	3,862	--
	(FTE)	(129)		(129)	(129)	(--)
Total Financial Services	$	8,982	8,860	9,115	11,895	+2,780
	(FTE)	(151)		(151)	(171)	(+20)

Objectives: To provide individual Indians and Indian tribes the same or equivalent technical, administrative, and protective services that are expected and duly rendered to a beneficiary under any lawful trust created or imposed to protect, maintain, or enhance the corpus of the trust estate; to properly manage and be accountable for tribal funds and individual Indian monies held in trust by the bureau as the fiduciary trustee.

Base Program ($9,115,000; FTE 151):

Central Office Operations ($1,550,000; FTE 22): The bureau is responsible for the management and investment of almost $2 billion of funds held in trust for tribes and individual Indians. More than of 290,000 separate accounts are maintained.

In response to more than 30 audit reports which have been issued by the Office of the Inspector General and in an effort to correct the many deficiencies identified by the audits and management reports prepared by Arthur Andersen &

Company, during FY 1990 the bureau will establish a new position of Deputy to the Assistant Secretary - Indian Affairs for Trust Funds. Both the Inspector General and the outside auditors have recommended that the bureau establish strong, centralized management over all aspects of trust fund activities including investments, accounting, receipt income from leases, and supervised accounts. The existing staff of trust fund investments and trust fund accounting will be placed under the direction of the Deputy. Two additional divisions for trust income collection and supervised accounts have been recommended and are proposed for funding in FY 1991. In FY 1990 funds and FTE are available for the divisions of investments and accounting. The office will monitor and evaluate all aspects of performance by the contractor retained by the bureau to provide cash concentration, investment, accounting, and reporting services. Policy guidance and oversight of both contracted operations and services provided in the field come through this office.

During FY 1990, the bureau will contract with outside auditors to reconcile the differences between the balances of trust funds carried in the finance system and the balances carried in the investment system. The bureau will also contract for an audit of a substantial number of tribal trust accounts which will cover approximately 73 percent of the funds held in trust.

Trust Fund Contract ($3,703,000): In order to safeguard investments, maximize earnings through cash concentration, and improve reporting to all account holders, the bureau has engaged the services of Security Pacific National Bank. The contractor's operations will be subject to both internal bureau audits and evaluations and audits performed by the Office of the Inspector General and major private auditing companies. The contracted system will be tested in FY 1990 and will be operational by the third quarter of FY 1990. As trust fund balances are audited, the monies from the audited accounts will be turned over to the contractor for servicing.

Field Operations ($3,862,000; FTE 129): The bureau is charged by law and regulations with the trust responsibility of accounting for and disbursing Individual Indian Monies (IIM) which come into the custody of bureau officials as a result of administering trust or restricted properties of individual Indians, and through per capita payments, judgments, awards, and claims. Deputy Indian Service Special Disbursing Agents are designated to carry out these responsibilities. The major portion of this effort is carried out at the field level. The staff members serve as contacts with Indians at the reservation level and perform work connected with activities concerned with administration of trust properties. Activities include: (1) accounting for and disbursing of tribal and individual Indian monies derived from the sale or lease of renewable and non-renewable trust resources such as land, timber, minerals, and water; (2) disbursing per capita payments, judgments, awards, and claims; (3) providing research involving special fiscal problems, and trust fund data for legislative acts, and recommendations for the execution of the acts; (4) assisting in investment of the various revenues so as to maximize returns; and (5) providing appropriate reports and responses to individual Indians or tribes, Treasury Department, General Accounting Office, Congress, and others. Funds are used to maintain the accounting, bookkeeping, and direct assistance services accomplished by the Indian Service Special Disbursing Agent field personnel in collecting and disbursing funds for resources held in trust on behalf of Indian tribes and individuals. There are 55 disbursing stations spread throughout the bureau. Each time a judgment/award/claim is involved, the number of individual Indian money accounts increases, generating increased basic operating costs at the agency level. The government has a fiduciary obligation to collect, disburse, and account for those funds in the most expeditious manner possible.

Change From FY 1991 Base: (Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	Difference + or -
Central Office Operations	$	1,550	3,800	+2,250
	FTE	(22)	(42)	(+20)
Trust Fund Contract	$	3,703	4,233	+530
Total	$	5,253	8,033	+2,780
	FTE	(22)	(42)	(+20)

Central Office Operations (+$2,250,000; FTE +20): This increase will be used to staff and support the office of the Deputy for Trust Funds and the divisions of trust income collections and supervised accounts. The division of trust income collections will be responsible for establishing policies and procedures to ensure adequate segregation of duties so that the same employee does not have the responsibility for receiving cash, transferring cash between accounts, and establishing new accounts. Staff in this division will conduct internal reviews at field locations having trust accounts to ensure compliance with payments required under leases and to provide technical assistance and training.

The bureau is required to ensure that disbursements from the Individual Indian Money (IIM) accounts of minors are in the best interest of the health, education and welfare of the minor. In order to provide such assurance, it is necessary to develop long-range financial plans for each child and document the exigencies which may arise that cause deviation from the planned expenditures. This division will establish standards for the financial plans which will be developed in the field in consultation with the parents or guardians of the minor child and staff from social services. The plans will be reviewed and updated on a periodic basis to reflect changed circumstances, whether financial or personal.

Once the plans are developed, disbursements from the minor's account which do not comport with the planned expenditures will be forwarded from the field to the division of supervised accounts with justification for the additional expenditure. Upon a documented determination that the additional disbursements are in the interests of the child, authorization would be provided by the staff of supervised accounts.

Of the requested increase, $250,000 will be used to continue to contract for annual financial statements on the status of funds held in trust. The first known outside audit of the trust funds was conducted in FY 1989 in response to Congressional directives. To better ensure the integrity of the trust funds and in keeping with the bureau's fiduciary responsibility, annual outside audits should be performed.

Trust Fund Contract (+$530,000): The increase will be used to contract with an accounting firm to audit the remainder of the tribal accounts prior to turning the funds over to Security Pacific National Bank. If resources are available within the amount provided for the Trust Fund contract, the bureau will also begin audits of the IIM accounts during FY 1991.

Object Class Distribution - Real Estate and Financial Trust Services

	FTE	Amount
Personnel Compensation	+12	$ +853,000
Personnel Benefits		+111,000
Travel		+25,000
Communications and Utilities		+15,000
Printing and Reproduction		+10,000
Other Services		+4,714,000
Supplies and Materials		+40,000
Equipment		+100,000
Total		$+5,868,000

Justification of Program and Performance

Activity: Trust Responsibilities
Subactivity: Tribe/Agency Operations

(Dollar amounts in thousands)

Program Element		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
A. Trust Services, General	$	397	392	409	549	+140
	(FTE)	(7)		(7)	(7)	(--)
B. Environmental Quality	$	661	652	676	543	-133
	(FTE)	(12)		(12)	(12)	(--)
C. Other Rights Protection	$	3,029	2,988	3,068	2,785	-283
	(FTE)	(40)		(40)	(40)	(--)
D. Real Estate Appraisals	$	3,482	3,435	3,558	3,334	-224
	(FTE)	(72)		(72)	(72)	(--)
E. Other Real Estate Services	$	16,361	16,139	16,709	17,070	+361
	(FTE)	(390)		(390)	(428)	(+38)
Total Requirements	$	23,930	23,606	24,420	24,281	-139
	(FTE)	(521)		(521)	(559)	(+38)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Tribe/Agency Operations	23,930	-324	23,606

The sequestration in Tribe/Agency Operations will be accomplished by reductions in travel, training and administrative costs associated with the various Tribe/Agency Programs.

A. Trust Services, General

Base Program ($409,000; FTE 7): The Trust Services, General program provides program management and support for trust and natural resources activities in field office land and trust matters. The responsibilities of staff supported in whole or in part by this program are in the following subactivities: (1) environmental services; (2) rights protection; (3) real estate services; (4) appraisals; (5) land use planning and land records improvement; (6) water policy implementation; (7) historical and archeological resources; (8) other trust related activities.

Funds may also be used for studies, contracts, geographic information system agreements and other services that may affect trust responsibilities programs at the field level.

Change from FY 1991 Base: (Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	Difference (+ or -)
Trust Services, General	$	409	549	+140
	(FTE)	(7)	(7)	(--)

Trust Services, General (+$140,000): The increase of $140,000 at the following areas is based on the application of the Indian Priority system at the tribe/agency level.

	FY 1990 Enacted	FY 1991 Request	Difference
Billings Area	$ 77,000	$ 0	$ - 77,000
Juneau Area	118,000	201,000	+ 83,000
Muskogee Area	20,000	0	- 20,000
Albuquerque Area	0	40,000	+ 40,000
Portland Area	119,000	119,000	---
Eastern Area	63,000	177,000	+ 114,000
TOTAL TRIBAL PRIORITIES	$ 397,000	$537,000	$ + 140,000
ADJUSTMENTS:			
One additional workday		+ 1,000	
Adjustment for Administrative Staffing Efficiencies		- 4,000	
FY 1991 Federal Pay Adjustments		+ 3,000	
P.L. 93-638 Contractor Pay Cost Adjustments		+ 2,000	
Federal Employees Retirement System (FERS)		+10,000	
FY 1991 REQUEST		$549,000	$ + 140,000

B. Environmental Quality Services

Base Program ($676,000; FTE 12): The funds at the tribe/agency level are used to: (1) prepare most of the minor and less controversial Environmental Assessments (EA's); (2) assist area office staff in obtaining details and gathering information for preparation of more extensive EA's and Environmental Impact Statements (EIS's); (3) review proposed actions to determine if they are categorically excluded or need further documentation to comply with the National Environmental Policy Act (NEPA); and (4) assist area office staff in obtaining information for compliance with the National Historic Preservation Act and the Archeological Resources Protection Act.

The agency personnel work with area office staff to determine impacts of federal projects proposed by other agencies, which may impact Indian lands, and aid the area office in determining location and existence of hazardous waste sites. Agencies are responsible for setting up on-site inspection and site testing and helping area and central offices monitor cleanup activities. Staff also work with area office archeologists in locating historic or archeological sites which may be affected by a proposed action; help in determining areas of cultural or religious importance; and monitor projects to ensure that agreed upon treatment of the site is carried out.

Change from FY 1991 Base: (Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	Difference (+ or -)
Environmental Quality	$	676	543	(-133)
	(FTE)	(12)	(12)	(—)

Environmental Quality (-$133,000): The decrease of $133,000 at the following areas is based on the application of the Indian Priority system at the tribe/agency level.

	FY 1990 Enacted	FY 1991 Request	Difference
Anadarko Area	$ 38,000	$ 38,000	---
Billings Area	28,000	0	$ -28,000
Juneau Area	78,000	78,000	---
Minneapolis Area	38,000	27,000	-11,000
Muskogee Area	42,000	42,000	---
Phoenix Area	89,000	105,000	16,000
Sacramento Area	10,000	9,000	-1,000
Albuquerque Area	109,000	0	-109,000
Navajo Area	120,000	120,000	---
Portland Area	109,000	109,000	---
TOTAL TRIBAL PRIORITIES	$ 661,000	$ 528,000	$-133,000
ADJUSTMENTS:			
One additional workday		+ 2,000	
Adjustment for Administrative & Staffing Efficiencies		- 6,000	
FY 1991 Federal Pay Adjustments		+ 5,000	
P.L. 93-638 Contractor Pay Cost Adjustments		+ 1,000	
Federal Employees Retirement System (FERS)		+13,000	
FY 1991 REQUEST..................................		$ 543,000	$-133,000

C. Other Rights Protection

Base Program ($3,068,000; FTE 40): The rights protection activity at the agency provides coordination and technical support services that are required for the protection of the trust estate which the United States administers on behalf of Indian tribes. This includes support to meet challenges to tribal rights and interests that are protected by treaty, statute, or Executive order, as well as the initiation of those actions required of a prudent trustee to clarify the nature of, and to ensure the continued liability of those rights.

This activity provides for the historical, technical, scientific, and other professional assistance necessary for the Government to litigate challenges to Indian rights which the United States has guaranteed through treaty or statute. Agency staff utilizes funds provided from the Field Operations part of the budget, primarily in contracts, to obtain the required services or information needed to pursue the protection of Indian rights. They assist in addressing Statute of Limitations and Unresolved Indian Rights Issues, as well as in environmental requirements.

The major costs for services required in protection of Indian rights are programmed by the central office, in the Field Operations subactivities of Litigation Support, Attorney Fees, Unresolved Indian Rights Issues, and others, based on information provided by the tribes and by the agency and area offices. The funds are used by agency staff to support rights protection activities, on a priority basis, considering the relative importance and urgency of the controversy or claim being negotiated, litigated, or researched.

Change from FY 1991 Base:		(Dollar amounts in thousands) FY 1991 Base	FY 1991 Estimate	Difference (+ or -)
Other Rights Protection	$	3,068	2,785	-283
	(FTE)	(40)	(40)	(--)

Other Rights Protection (-$283,000): The decrease of $283,000 at the following areas is based on the application of the Indian Priority system at the tribe/agency level.

	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$ 18,200	$ 18,200	$ ---
Anadarko Area	27,000	27,000	---
Billings Area	273,000	230,300	- 42,700
Juneau Area	563,000	564,000	+ 1,000
Minneapolis Area	291,400	352,600	+ 61,200
Phoenix Area	298,000	300,000	+ 2,000
Sacramento Area	231,000	218,500	- 12,500
Albuquerque Area	636,000	530,000	-106,000
Navajo Area	167,000	0	-167,000
Portland Area	474,100	455,100	- 19,000
Eastern Area	50,300	50,300	---
TOTAL TRIBAL PRIORITIES	$3,029,000	$2,746,000	$-283,000
ADJUSTMENTS:			
One additional workday		+ 6,000	
Adjustment for Administrative Staffing Efficiencies		-21,000	
FY 1991 Federal Pay Adjustments		+17,000	
P.L. 93-638 Contractor Pay Cost Adjustments		+ 3,000	
Federal Employees Retirement System (FERS)		+34,000	
FY 1991 REQUEST..................................		$ 2,785,000	$-283,000

D. Real Estate Appraisals

Base Program ($3,558,000; FTE 72): The Code of Federal Regulations and bureau policy require formal real estate appraisal reports to document and support agency actions involving real estate held in trust for individual Indians and tribes. Each year between 30,000 and 40,000 real estate transactions are processed for Indian landowners. These include real estate developments, sales, partitions, exchanges, leases and easements. Most of these transactions require professional appraisal services to comply with bureau policy and federal regulations. Documented appraisal reports are the evidence that the bureau has met its trust responsibility and that Indian landowners are being fairly compensated for their real property resources.

Between 65 and 75 professional appraisers provide services to support agency realty actions. These services include fully documented appraisal reports, feasibility studies, highest and best use studies, preliminary estimates of value, real estate consultation, and batch appraisals.

Change from FY 1991 Base: (Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	Difference (+ or -)
Real Estate Appraisals	$	3,558	3,334	-224
	(FTE)	(72)	(72)	(--)

Real Estate Appraisals (-$224,000): The decrease of $224,000 at the following areas is based on the application of the Indian Priority system at the tribe/agency level.

	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$ 358,000	$ 358,000	
Anadarko Area	291,000	281,800	$ - 9,200
Billings Area	301,000	297,000	- 4,000
Juneau Area	184,000	184,000	---
Minneapolis Area	167,400	174,800	+ 7,400
Muskogee Area	517,600	514,600	- 3,000
Phoenix Area	407,000	397,800	- 9,200
Sacramento Area	235,000	53,000	-182,000
Albuquerque Area	147,000	123,000	- 24,000
Navajo Area	148,000	148,000	---
Portland	686,000	686,000	---
Eastern	40,000	40,000	---
TOTAL TRIBAL PRIORITIES	$3,482,000	$3,258,000	$ -224,000
ADJUSTMENTS:			
One additional workday		+9,000	
Adjustment for Administrative Staffing Efficiencies		-35,000	
FY 1991 Federal Pay Adjustments		+27,000	
P.L. 93-638 Contractor Pay Cost Adjustments		+2,000	
Federal Employees Retirement System (FERS)		+73,000	
FY 1991 REQUEST..................................		$3,334,000	$-224,000

E. Other Real Estate Services

Base Program ($16,709,000; FTE 390): Staff at the agency level provides real property management services, counseling, and land use management planning for individual Indian allottees and 517 federally recognized Indian tribal/Alaska Native entities, which own a beneficial interest in almost 53 million acres of trust land. Various decision-making processes are developed through cooperative efforts with the Indian landowners for the proper utilization, development, and enhancement of Indian trust lands.

Some of the major functions include surface and sub-surface leasing, lease compliance, rights-of-way, land surveys, land acquisition and disposal, probates, and land ownership recordkeeping. The overall aim of these interrelated activities is to provide Indian landowners the essential data and assistance in support of the management and development of their surface and sub-surface land resources in keeping with the trust management role of the Federal Government. As a result, trust land leasing activities are a major part of the real estate program and provide a major source of income to the Indians. In addition, landowners derive millions of dollars in added land values from land improvement and conservation stipulations contained in Bureau leases. The agency staff performs initial land ownership recordkeeping, which becomes more complicated each day because of the heirship problem and segregated surface and sub-surface ownership. There are over 200,000 tracts of trust land with an average tract ownership of ten undivided interest owners in allotted tracts, resulting in over 2,000,000 separate undivided interests on which to keep records. The preparation and administration of probates are required in the administration of trust property and are essential functions of the basic program. This has also caused a mounting Indian land heirship problem. Work with governmental and tribal entities to utilize existing authorities to resolve this problem will continue.

Change from FY 1991 Base: (Dollars amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	Difference (+ or -)
Other Real Estate Services	$ (FTE)	16,709 (390)	17,070 (428)	+361 (+38)

Other Real Estate Services ($361,000; FTE +38): The increase of $361,000 at the following areas is based on the application of the Indian Priority system at the tribe/agency level.

	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$ 2,405,800	$ 2,443,800	$ + 38,000
Anadarko Area	1,410,000	1,315,700	- 94,300
Billings Area	1,988,000	2,095,300	+107,300
Juneau Area	2,108,000	2,182,600	+ 74,600
Minneapolis Area	482,200	526,300	+ 44,100
Muskogee	967,400	1,021,500	+ 54,100
Phoenix Area	1,594,000	1,596,500	+ 2,500
Sacramento Area	960,000	1,149,000	+189,000
Albuquerque Area	936,000	901,000	- 35,000
Navajo Area	757,000	779,400	+ 22,400
Portland Area	1,906,900	1,894,200	- 12,700
Eastern Area	845,700	816,700	- 29,000
TOTAL TRIBAL PRIORITIES	$16,361,000	$16,722,000	$+361,000

ADJUSTMENTS		
One additional workday	+ 54,000	
Adjustment for Administrative Staffing Efficiencies	-206,000	
FY 1991 Federal Pay Adjustments	+160,000	
P.L. 93-638 Contractor Pay Cost Adjustments	+ 20,000	
Federal Employees Retirement System (FERS)	+320,000	
FY 1991 REQUEST	$17,070,000	$+361,000

Object Class Distribution - Trust Responsibilities - Tribe/Agency Operations

	FTE	Amount
Personnel Compensation	+38	$ 1,547,000
Personnel Benefits		217,000
Travel		-200,000
Supplies and Materials		-250,000
Equipment		-550,000
Printing and reproduction		-100,000
Other Services		-803,000
Total		$ -139,000

Justification of Program and Performance

Activity: Facilities Management

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from Base
A. GSA and Direct Rentals Payments	$	12,108	11,944	13,035	13,035	---
B. Facilities Operation & Maintenance	$	71,884	70,909	72,868	72,553	-315
	(FTE)	(1,074)	(1,074)	(1,074)	(1,074)	(---)
C. New Facilities	$	300	296	---	273	+273
D. Initiatives and Technical Training	$	1,500	1,479	1,500	1,300	-200
Total Requirements	$	85,792	84,628	87,403	87,161	-242
	(FTE)	(1,074)	(1,074)	(1,074)	(1,074)	(---)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Facilities Management Program	85,792	-1,164	84,628

This reduction will be accomplished by deferring hiring of vacated positions during FY 1990, limiting travel and other administrative costs.

A. GSA and Direct Rentals

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from Base
GSA Rentals	$	11,016	10,867	11,835	11,835	---
Direct Rentals	$	1,092	1,077	1,200	1,200	---
Total Rentals	$	12,108	11,944	13,035	13,035	---

Objective: To provide adequate space and physical facilities in which to operate bureau programs effectively at locations which do not have adequate bureau-owned facilities.

Base Program ($13,035,000; FTE 0): The base program includes funds for 1,168,704 square feet of GSA-provided space and 124,192 square feet of direct rentals serving bureau programs throughout the country. Approximately $1,200,000 of this amount is for direct rental payments to tribes and others for the use by the BIA of non-federal facilities.

B. Facilities Operation and Maintenance

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from Base
Area Office Operations	$	4,163	4,107	4,236	4,771	+535
	(FTE)	(103)	(103)	(103)	(103)	(---)
Field Operations O&M	$	67,721	66,802	68,632	67,782	-850
	(FTE)	(971)	(971)	(971)	(971)	--
Total Operations	$	71,884	70,909	72,868	72,553	-315
	(FTE)	(1,074)	(1,074)	(1,074)	(1,074)	(---)

Objectives: To provide basic facility operating services to existing bureau-owned and/or operated facilities and to maintain these facilities in good safe operating condition for the conduct of bureau programs.

Base Program ($72,868,000; FTE 1,074):

Area Office Operations ($4,236,000; FTE 103): The area office facility management staff provides technical coordination and engineering services, O&M oversight which includes developing agency level facility operation and maintenance programs; distributing available funds; providing technical guidance, monitoring, inspection and evaluation services; and providing field locations with energy conservation and environmental protection expertise and facilities related training. The area office facility management and engineering section provides engineering survey services and construction management and engineering technical assistance. The area office staff also provides direct support to the agency level facility programs. These direct support activities include supervision and inspection of major repair and improvement projects; inspection and evaluation of specialty systems such as boilers, water and waste disposal, water treatment, and control systems for heating and cooling plants, and alarms; diagnosing problems in electrical and mechanical systems; and identifying and developing repair project needs, scope and costs. The staff performing these functions consists primarily of facility managers, engineers, communications specialists, and clerks. Area staff provides the direction and support in maintaining the FACCOM system at the agency level. This management information system provides data for accomplishments and budgeting at the location level.

Existing Facilities O&M ($68,632,000; FTE 971): This program provides essential services for educational and non-educational physical facilities throughout the bureau. The physical facilities consist of approximately 3,509 buildings (including BIA, grant and contract schools, excluding quarters) containing approximately 19,872,511 square feet. Also, utilty systems and services associated with site keeping functions are included in the program. The various types of buildings are: academic facilities, dormitories, law enforcement facilities, administrative offices, roads maintenance and construction facilities, forestry facilities and recreation facilities. The utility systems include: backbone telecommunications equipment, wells, water treatment plants, sewer treatment plants, central heating plants, and electrical power distribution systems. Site services include: landfill maintenance, lawn care and mowing, tree trimming, maintenance of all exterior areas used in support of athletic programs, the maintenance of nonpublic access roads, and refuse disposal. Costs to the O&M program include: personnel services, supplies, materials and equipment. Recurring costs are for heating, cooling, electricity, water, sewage, refuse disposal, backbone telecommunications equipment, unscheduled maintenance, preventive maintenance, GSA vehicle rental, lease agreements, custodial, and protection services.

C. New Facilities

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from Base
New Facilities	$	300	296	0	273	+273

Base Program ($0): This program is funded to support newly constructed or expanded facilities.

D. Initiatives and Training

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from Base
Initiatives and Training	$	1,500	1,479	1,500	1,300	-200
Total Program	$	1,500	1,479	1,500	1,300	-200

Base Program ($1,500,000): Following cost/benefit analyses the bureau funds improvement projects which will reduce future O&M costs under this special program. Included is a comprehensive training effort to improve the quality and effectiveness of maintenance services and to emphasize preventive maintenance activities which should further reduce future repair and renovation requirements.

Change from FY 1991 Base: (Dollar amounts in thousands)

Program Element		FY 1991 Base	FY 1991 Estimate	+/- Difference
Area Office Operations	$	4,236	4,771	+535
Existing Facilities O&M	$	68,632	67,782	-850
New Facilities O&M	$	0	273	+273
Initiatives/Training	$	1,500	1,300	-200
Total	$	74,368	74,126	-242

Area Office Operations (+$535,000): During the course of development of the O&M funding formula, O&M costs were carefully analyzed over a multi-year period. It was found, to a limited degree, that area level technical assistance and other staff costs were supported, in part, by existing facilities O&M. In order to accurately reflect full staff costs in the appropriate element and to fund cost of supporting facility management staff on-board in the area offices (103 FTE's), Area Office Operations has been increased by +$535,000. Funding at this level would provide sufficient support to Area facility managers to fulfull responsibilities, including retaining quality staff, without having to fill vacant positions at lower graded levels with less qualified/experienced staff and maintaining adequate funding for travel to agencies and schools in their jurisdiction to provide guidance and technical assistance.

Existing Facilities (-$850,000): The decrease represents savings realized through the excess space O&M initiative program. Through aggressive management and cost initiatives undertaken in prior years, total program costs have been limited in their increase. The O&M budget for Existing Facilities has been prepared using techniques developed in the process of revising the O&M funds allocation formula in accordance with Congressional directives.

Over the past several years, as part of the development of the bureau's improved operations and maintenance program, a number of O&M costs containment and reduction actions have been implemented. These include: continued aggressive excess-space reduction, O&M initiatives whereby capital improvements lead to lower future O&M operating levels, discontinuance of improperly funded activities identified during the course of program reviews now conducted on an annual basis bureauwide, greater emphasis on preventive maintenance and minor improvement and repair activities to slow deterioration of buildings and equipment, and staff training at all levels. These actions have resulted in lower annual operating costs levels.

New Facilities O&M (+$273,000): The increase will support new facilities which will become operational in FY 1991. As construction projects are completed, facilities are added to the building maintenance inventory. The following is the list of additions for FY 1991:

Facility	Square Footage	Estimated O&M Funding Needed	
St. Francis School	77,500	$ 107,000	(1/2 yr.)
Laguna Middle School	40,000	54,000	(1/4 yr.)
Pine Hill School	21,200	72,000	(4/4 yr.)
Haskell Indian Junior College	1,200	3,000	(3/4 yr.)
Juvenile Detention Centers	30,000	37,000	(1/4 yr.)
	169,900	$ 273,000	

Initiatives/Training (-$200,000): The decrease is the result of the success realized by the facilities program initiatives begun in FY 1988. Facilities training initiatives begun in FY 1988 and continued through FY 1990 have resulted in most of the facilities staff completing training by the end of FY 1990.

Object Class Distribution - Facilities Management Activity

	FTE	Amount
Personnel compensation		+$1,074,000
Personnel benefits		+ 150,400
Travel		+ 12,000
Supplies and materials		+ 7,000
Other services		-1,485,400
Total		-$ 242,000

Activity Summary

(Dollar amounts in thousands)

Activity: General Administration

Subactivity	FY 1989 Actual Approp.	FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	+/- From Base
Management & Administration	38,151	42,106	41,534	44,564	48,096	+3,532
ADP Services	17,650	18,203	17,956	18,313	20,663	+2,350
Employee Compen. Payments	14,962	18,481	18,230	11,449	11,449	---
Program Management	6,016	6,931	6,837	6,955	7,755	+800
Consolidated Program Training	840	840	829	840	1,040	+200
Tribe/Agency Operations	19,843	20,837	20,554	21,383	23,059	+1,676
Total	97,462	107,398	105,940	103,504	112,062	+8,558

Justification of Program and Performance

Activity: General Administration
Subactivity: Management and Administration

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
A. Executive Direction & EEO	$	3,177	3,134	3,207	4,497	+1,290
	FTE	(56)	(56)	(56)	(79)	(+23)
B. Administrative Services	$	38,314	37,794	40,738	42,938	+2,200
	FTE	(707)	(707)	(707)	(707)	(---)
C. Safety Management	$	615	606	619	661	+42
	FTE	(11)	(11)	(11)	(11)	(---)
Total Requirements	$	42,106	41,534	44,564	48,096	+3,532
	FTE	(774)	(774)	(774)	(797)	(+23)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Management and Administration	42,106	-572	41,534

This reduction will be accomplished by deferring purchases of equipment and supplies, by curtailing travel, and by delaying the filling of vacant positions.

A. Executive Direction and EEO

Area Office Operations	$	2,133	2,104	2,154	2,229	+75
	FTE	(33)	(33)	(33)	(33)	(--)
Central Office Operations	$	1,044	1,030	1,053	2,268	+1,215
	FTE	(23)	(23)	(23)	(46)	(+23)
Total	$	3,177	3,134	3,207	4,497	+1,290
	FTE	(56)	(56)	(56)	(79)	(+23)

Objective: To provide planning, direction, and management leadership for the development and implementation of policy initiatives and programs undertaken by the bureau to ensure achievement of its mission, goals, and objectives.

Base Program ($3,207,000; FTE 56): This program covers the operation of the immediate offices and staff of the line managers at central office and area office levels of the bureau. The line managers and their staff provide for organizational leadership and coordination to ensure that all program levels are effectively integrated to achieve the overall mission of the bureau. Basic activities include decision-making, direction, policy formulation and review, tribal consultation, public relations, representation of the bureau to other governmental agencies and private sector organizations, and overall management of assigned resources.

Area Office Operations ($2,154,000; FTE 33): This activity funds the positions of area directors and a limited professional staff at 12 locations to provide for the management and direction of the entire area office structure.

Central Office ($1,053,000; FTE 23): The Deputy to the Assistant Secretary - Indian Affairs (Operations), his immediate staff, and program support services managed by the Public Information, Congressional and Legislative Affairs, Executive Secretariat Staff Office, and the Equal Employment Opportunity Staff are funded from this activity. These organizations provide professional services to both the program and the administrative organizations which provide leadership at the headquarters level.

Deputy to the Assistant Secretary - Indian Affairs (Operations) ($223,000; FTE 5): The Deputy to the Assistant Secretary - Indian Affairs (Operations) oversees the management of activities, programs, and functions which extend across bureau directorates. This deputy is responsible for all functions, programs, and activities assigned to the staff offices funded by the Executive Direction activity and for the Offices of Administration, Data Systems, and Facilities Management. In addition, as the Principal Deputy to the Assistant Secretary, this deputy manages the day-to-day operations of the non-education bureau organization, supervising the bureau's area directors and providing the management leadership for problem resolution activities and special projects undertaken on behalf of the entire bureau organization.

Congressional and Legislative Affairs Staff ($242,000; FTE 5): This office coordinates all legislative planning and congressional relations activities of the Bureau of Indian Affairs, except those relating solely to appropriations; provides legislative research and staff assistance in planning, developing, and drafting legislation; reviews and analyzes BIA and tribal legislative needs; prepares witness statements and briefing books for congressional hearings on legislation; and reviews introduced and draft bills and proposed legislative reports, proposals, and witness statements proposed by other agencies for possible impact on the BIA or tribes.

Public Information Staff ($81,000; FTE 1): This office maintains liaison with the media and the public. Support services are provided through contracting for photography, writing feature stories, updating tribal data, and other activities. The office prepares speeches for key officials in the bureau, news releases on bureau and tribal activities, and general publications and audiovisual materials in support of the bureau's mission. Materials are prepared to be used as correspondence aids in answering repetitive public inquiries on current and historic issues. The public information officer serves as public information consultant to top officials of the bureau and advises them on Indian and other public reaction to planned policies affecting the Indian people. The office maintains a functional relationship with the Office of Public Affairs, Department of the Interior, and acts as the Assistant Secretary's representative for all external activities pertaining to Indian issues in the department.

Executive Secretariat Staff ($119,000; FTE 4): This office is responsible for assuring the proper and timely development and coordination of bureau documents requiring review, action, or signature by the Assistant Secretary. The staff ensures that documents, correspondence, or actions generated or acted upon by the bureau and requiring review by the Assistant Secretary are complete, accurate, and timely. The staff works closely with the Departmental Executive Secretariat to ensure bureau conformance to Secretarial and Departmental guidance and policies and maintains contact with other Departmental Assistant Secretaries and their senior staff to ensure coordination on issues of multi-bureau interest and concern.

Equal Employment Opportunity Staff ($388,000; FTE 8): This office develops plans, procedures, and regulations for carrying out the EEO program to promote equal opportunity without regard to race, color, religion, sex, national origin or physical or mental handicap in all organizational units, locations, occupations, and levels of responsibility. The staff monitors the continued application of the Indian preference policy in all phases of the personnel process including initial hires, promotions, and transfers; coordinates Special Emphasis Programs such as the Federal Women's Program and an Hispanic Employment Program; develops and implements an affirmative action program plan for the recruitment, employment and upgrading of minorities and women; recruits and trains EEO counselors to provide aggrieved persons adequate resources for fair and impartial consideration of complaints involving issues of discrimination; assures timely processing, investigation, and resolution of complaints of discrimination; provides managers and supervisors training on EEO responsibilities; and monitors and assesses the effectiveness of the EEO Program. This office is responsible for determining the acceptance or rejection of all complaints, investigating the accepted complaints, and coordinating implementation of Section 504 requirements of the Rehabilitation Act of 1973, as amended.

Change from FY 1991 Base: (Dollar amounts in thousands)

Program Element		FY 1991 Base	FY 1991 Estimate	+/- Difference
Area Office Operations	$	2,154	2,229	+75
	(FTE)	(33)	(33)	(---)
Central Office Operations	$	1,053	2,268	+1,215
	(FTE)	(23)	(46)	(+23)
Total Requirement	$	3,207	4,497	+1,290
	(FTE)	(56)	(79)	(+23)

Area Office Operations (+$75,000): The change is the result of the application of the Indian Priority System at the area level. The changes by area are as follows:

Area Office	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$186,000	$186,000	$ 0
Anadarko Area	120,000	120,000	0
Billings Area	119,000	131,000	+12,000
Juneau Area	148,000	185,000	+37,000
Minneapolis Area	106,000	121,000	+15,000
Muskogee Area	111,000	126,000	+15,000
Phoenix Area	205,000	220,000	+15,000
Sacramento Area	125,000	125,000	0
Albuquerque Area	445,000	357,000	-88,000
Navajo Area	126,000	195,000	+69,000
Portland Area	270,000	270,000	0
Eastern Area	172,000	172,000	0
TOTAL AREA PRIORITIES	2,133,000	2,208,000	$+75,000

ADJUSTMENTS:	
One additional workday	4,000
Adjustment for Emproved Administration and Staffing Efficiencies	-15,000
FY 1991 Federal Pay Adjustment	12,000
Federal Employees Retirement System (FERS)	20,000
FY 1991 REQUEST	2,229,000

Central Office Operations (+$1,215,000; FTE +23): The components of this increase are:

Congressional and Legislative Affairs and Public Information (+$215,000; FTE +3): The increase in funds requested for the Office of Congressional and Legislative Affairs ($55,000) is to support the current staffing level. The increase in funding and FTE in Public Information ($160,000) will be used for additional positions established to respond to the hundreds of weekly requests for information from the public and to do the research necessary to be responsive to requests from the media.

Office of Audit and Evaluation (+$1,000,000; FTE +20): The increased funding and FTE would be used to staff an Office of Audit and Evaluation under the control of the Deputy to the Assistant Secretary - Indian Affairs (Operations). The mission of this office will be to develop, organize, and implement systematic administrative and program reviews and evaluations. Monitoring and evaluating the bureau's delivery of program services to the Indian people will still be an integral responsibility of program managers, with this office serving as the catalyst to ensure their corrective actions are implemented. The office will provide an independent and flexible means for carrying out internal audits and evaluations of BIA program operations and financial controls, for monitoring the follow-up corrective actions required by A-123 internal control reviews and audits conducted by the Office of the Inspector General and the General Accounting Office. The office will provide the bureau with a strong management element of control and accountability so that the bureau does not have to rely solely on the Office of the Inspector General for audits and evaluations of operations. The office will provide a level of coordination and cohesiveness to ongoing efforts which is not now possible with the two positions the bureau has established to coordinate these activities.

B. Administrative Services

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Area Office Operations	$	16,431	16,208	16,870	17,459	+589
	(FTE)	(484)	(484)	(484)	(484)	(---)
Central Office Operations	$	21,883	21,586	23,868	25,479	+1,611
	(FTE)	(223)	(223)	(223)	(223)	(---)
Total Operations	$	38,314	37,794	40,738	42,938	+2,200
	(FTE)	(707)	(707)	(707)	(707)	(---)

Objective: To provide policies and support in the areas of property, procurement, contracting, personnel and financial management to all the bureau's program service delivery systems

Base Program ($40,738,000; FTE 707): The staff provides integral administrative support to the bureau's program delivery system. The function serves as an equal partner with the program functions to accomplish the mission of the bureau, ensuring that those administrative services necessary for program operations are adequately provided. At the same time, it provides the foundation for the control and accountability of resources used to achieve its mission. These dual roles must be carefully balanced to ensure that one does not dominate the other and to ensure that the total system operates effectively for the benefit of the bureau's clientele.

Area Office Operations ($16,870,000; FTE 484): The area offices operate as centers for procurement, property management, budgeting and fund control, finance and accounting associated with P.L. 93-638 contracts, and personnel management for all agencies and education installations under their jurisdiction. These centers carry out the workload associated with all administrative authorities with the exception of those authorities which have been redelegated to the agencies and schools.

Central Office Operations ($23,868,000; FTE 223): The administrative services program at the central office level is primarily involved in the development and implementation of policies and procedures for all administrative functions and for conducting oversight management reviews.

Central Office Administration ($4,460,000; FTE 88):

Office of Administration ($383,000; FTE 5): This office is responsible for providing staff support to the Assistant Secretary - Indian Affairs in the development and management of bureau programs and policies designed to provide support services bureauwide. These programs include the functions of budget, finance and accounting, management support services, personnel management, procurement, property management, contracting, and safety management. The office administers bureauwide systems for fiscal accounting and disbursements, payroll and personnel records, and provides for administrative and housekeeping services for the central office, the Eastern Area Office, and the Indian Arts and Crafts Board. This office also manages the bureau's intra-governmental program, for which the base amount is $10,723,000 to cover such services as FTS, postage, Pay/Pers, departmental assessments, and bureauwide printing of manuals and other documents.

This office also coordinates the administrative review teams which are composed of central office staff who conduct consolidated reviews of the Area Offices' administrative functions of accounting and financial management, personnel management research and evaluation, and contracting. The teams identify specific program weaknesses; analyze operations to ensure compliance with all applicable laws, regulations, directives and policy; propose corrective actions to overcome the weaknesses; and provide follow-up to ensure implementation of the corrective measures. The teams are able to pinpoint problem areas prior to formal audits, identify trends, and provide top bureau management with detailed overviews of field operations. The teams conduct four reviews annually.

Contracting and Grants Administration ($730,000; FTE 10): This division provides staff support, services, and activities in three major areas: policy and systems planning, analysis, formulation, and development; internal and administrative control reviews of the acquisition and grant process, including evaluation to determine compliance with applicable laws, regulations, and procedures; and direct operational services to the Assistant Secretary, central office directorates, and to the Indian Arts and Crafts Board. A major component of policy and systems development involves ascertaining need and implementing automated systems to improve the efficiency and effectiveness of the workforce, including training.

The staff exercises significant bureauwide policy, planning, and oversight roles for maintaining and strengthening: (1) the acquisition of goods, services and products; (2) financial (grants) assistance to tribal organizations; and (3) cooperative agreements between the bureau and other governmental entities. These functions and responsibilities impact over 400 Tribal/Alaska Native governing bodies, their 900,000 reservation constituents located in 30 states. The staff also provides supportive services to the bureau's program staff in meeting its procurement needs and requirements.

This division also initiates changes in, as well as operates and maintains, a contract and grants information management system at an estimated annual cost of $166,000. The system, which is available to contracting officers at all levels of the bureau, provides ready access to all current federal and departmental acquisition requirements; automatic data processing procurement regulations; and P.L. 93-638 contract regulations. The system provides automatic generation of standard clauses (determined by the type of contract) to substantially enhance the accuracy and content of all bureau contract documents.

Personnel Management ($2,372,000; FTE 47): This division is responsible for the development, coordination, administration, and evaluation of bureauwide personnel management and organization management programs and policies. The division formulates objectives, policies, and guidelines for personnel management activities; updates the personnel segments of the Bureau of Indian Affairs Manual in accordance with changing laws and regulations developed by the Office of Personnel Management and the Department's Office of Personnel; and provides expert advice and technical assistance to area personnel offices and to all levels of bureau management. The division guides the bureauwide position management and position classification programs in accordance with governmentwide standards developed by OPM.

It develops standards and criteria for securing and retaining qualified employees, coordinates filling of all bureau key positions, determines the job categories for which the bureau requires special criteria for recruitment of Indians, develops standards to meet these criteria, provides guidance to bureau management on labor-management relations issues, and maintains relationships with employee unions recognized by the bureau on a national basis. It initiates and administers comprehensive management development plans and programs, including training and career development. It oversees employee-management relations to assure that working conditions and employee conduct meet accepted standards. The division provides specialists for the administrative management area reviews and it conducts personnel program reviews and evaluations on a bureauwide basis and recommends to management officials methods for improvement. The division reviews all requested changes to existing organization plans at all levels of the bureau and provides the written analysis and impact statements when such proposed changes require departmental and congressional approval. It provides technical assistance to the Office of Indian Education Programs in the development of policies, procedures, and manual issuances pertaining to the personnel and payroll aspects of the contract teacher employment system, and works with the Bureau of Reclamation to resolve system problems encountered in the PAY/PERS system. The division provides operating personnel services for central office organizations located in Washington, D.C.; the Eastern Area Office; and the Indian Arts and Crafts Board.

Property Management ($656,000; FTE 21): This division provides staff assistance regarding programs for all bureau-owned real and personal property, mail management, printing and publications management (including copying and duplicating), space, motor vehicle management, small purchasing, and procurement from directed sources. The division is responsible for: (1) developing, modifying, reviewing, evaluating, and implementing bureauwide policies and procedures related to management of the above listed functions; (2) maintaining the bureau property management regulations, incorporating federal and departmental policies, regulations and procedures promulgated by federal regulatory agencies; and (3) providing bureau oversight and technical assistance to areas and those offices with operational responsibilities. These services include processing all BIA motor vehicle acquisitions, printing/copying and duplicating equipment acquisitions, realty disposal actions (e.g., transfers to local governments and Indian tribes), requests for leasing of office/facilities space, requests for assignment and acquisition of U.S. Government motor vehicle license tags, maintaining and reporting the bureau's automated property inventory systems, and requesting DOD assignment of national stock numbers for cataloging inventory items. The division performs studies relating to utilization of facilities, disposal systems for excess property, and inventory training needs; conducts training in the areas of functional responsibilities; and provides related housekeeping services to central office entities located in Washington, D.C.; the Eastern Area Office; and the Indian Arts and Crafts Board.

Directives and Regulations Staff ($319,000; FTE 5): This staff is responsible for the development and implementation of a bureauwide program for all elements of information resources management, Federal register documents, directives, regulations, reports, forms, Privacy Act, and Freedom of Information Act. The staff provides staff assistance to the Director and technical assistance to program managers throughout the bureau on the preparation and publication of guidance to bureau officials and employees and to the public.

The staff also oversees the records management program which is critical in the BIA where an unusually high percentage of the records have been appraised as having a permanent value. The program is designed to bring the bureau into compliance with applicable laws and federal records management regulations.

In FY 1990, the bureau focused on a major revision of the records manual and training for field staff on the new records management system. The new manual was implemented for use in FY 1990 with primary emphasis on follow-up visits to field offices to provide technical assistance and continued training. In FY 1991, the bureau will continue to focus its efforts on implementation of the revised records manual. The records program will continue to provide extensive training in records management at numerous locations including on-site technical assistance. The staff works with all central office programs to ensure compliance with the requirements of the Paperwork Reduction Act.

Financial Management ($8,685,000; FTE 135):

Assistant Director, Financial Management ($130,000; FTE 2): This office is responsible for the development of policies, programs, systems, and guidelines for financial management functions; for performance of budget formulation and execution, fiscal accounting, compensation, and employee data systems; for provision of bureauwide technical assistance in budget and accounting; and for support services in operating budget and fiscal accounting functions.

Program Development and Implementation ($1,288,000; FTE 20): This division provides staff assistance to the Assistant Director, Financial Management regarding functions identified with budget formulation and execution. The division implements the bureau's policies and program goals through the budgeting process; develops instructions for preparation of annual program plans: reviews program requests on the basis of fiscal reasonableness, feasibility and justifiability; develops bureauwide budget planning documents; develops budget estimates and justifications; prepares for appropriations hearings; and prepares field planning allowances and allocations. The division performs budget execution, which has as its primary function fund control for the bureau. Activities involved are requesting and maintaining apportionments, making fund allotments and distributions bureauwide, conducting and monitoring bureau financial programming, monitoring FTE usage, conducting systematic obligation status reviews to insure compliance with fiscal controls, and developing policies and guidance to control these activities throughout the bureau.

Accounting Management ($7,267,000; FTE 113): This division provides staff assistance in the functions identified with accounting, fiscal operations, financial management, accomplishment reporting, payroll, and automated personnel records systems; and directs the payroll liaison, finance and accounting, and financial management systems operations located in Albuquerque, New Mexico. The division develops policies, standards, specifications, systems and operating procedures to be used throughout the several designated accounting stations of the bureau. Operational costs of $3,735,000 associated with the Federal Financial System which will come on line in October 1990 are included in this activity.

Intra-Governmental Assessments ($10,723,000): The Intra-Governmental program includes assessments for services provided to the bureau by the Department of the Interior, the Bureau of Reclamation, the United States Postal Service, and the General Services Administration. These requests are based on estimates provided to the bureau by the respective agencies. The breakdown by the various categories are:

	FY 1991 Base	Increase	FY 1991 Estimate
Pay/Pers	$2,618,000	$	$2,618,000
Postage	1,750,000		1,750,000
FTS-General	5,322,000		5,322,000
Bureau Printing Services	102,000		102,000
Departmental Billings	931,000	+863,000	1,794,000
Total	$10,723,000	$+863,000	$11,586,000

Some of the services provided by the Department of the Interior are: Departmental News & Information; O/S Budget Operations; Medical & Health Services; Departmental Human & Resources Development Center; Denver Learning Center; Albuquerque Learning Center; Information Technology Center; Allex Database; Printing & Publications; Enforcement & Security Management; WCF Direction; Fiscal Services; Payroll/Personnel processing (Pay/Pers); and General Services.

Changes from FY 1991 Base: (Dollars amounts in thousands)

Program Element		FY 1991 Base	FY 1991 Estimate	+/- Difference
Area Office Operations	$	16,870	17,459	+589
	(FTE)	(484)	(484)	(---)
Central Office Operations	$	23,868	25,479	+1,611
	(FTE)	(223)	(223)	(---)
Total requirements	$	40,738	42,938	+2,200
	(FTE)	(707)	(707)	(---)

Area Office Operations (+$589,000): The change is the result of the priorities established at the area level. The changes by area are as follows:

Area Office	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen Area	$1,685,000	$1,743,000	$+58,000
Anadarko Area	1,095,000	1,073,000	-22,000
Billings Area	978,000	1,054,000	+76,000
Juneau Area	1,544,000	1,785,000	+241,000
Minneapolis Area	952,000	966,000	+14,000
Muskogee Area	377,000	565,000	+188,000
Phoenix Area	2,521,000	2,475,000	-46,000
Sacramento Area	419,000	551,000	+132,000
Albuquerque Area	1,917,000	2,064,000	+147,000
Navajo Area	2,811,000	2,610,000	-201,000
Portland Area	1,469,000	1,469,000	0
Eastern Area	663,000	665,000	+2,000
TOTAL AREA PRIORITIES	16,431,000	17,020,000	$+589,000
ADJUSTMENTS:			
One additional workday		54,000	
Adjustment for Improve Admininstrative and Staffing Efficiencies		-277,000	
FY 1991 Federal Pay Adjustment		215,000	
Federal Employees Retirement System (FERS)		447,000	
FY 1991 REQUEST		17,459,000	

Central Office Operations (+$1,611,000): The components of this increase are as follows:

Accounting Management (+$748,000): The bureau's accounting operations were consolidated in Albuquerque, NM in 1988, adding 28 positions to the staff. No additional funding was provided to cover the increased costs and the bureau has had to reprogram funds from other administration functions to cover these costs during FY 1989 and FY 1990. These internal reprogrammings have resulted in hiring delays and leaving positions vacant in the divisions of contract management, program development and implementation, personnel, and management support, thus impairing the ability of these offices to carry out their responsibilities.

In addition, the FY 1989 budget proposed a reduction of $150,000 on the assumption that the bureau would implement an automated time and attendance system. Implementation of the system has been deferred awaiting the conversion of the current departmentwide payroll and personnel system to "PAY/PERS Future State." The increase will restore the FY 1989 reduction of payroll operations and fund the costs of the current payroll operations staff.

Departmental Assessments (+$863,000): The increases consist of:

Take Pride in America ($71,000): The bureau is requesting $71,000 as its share of funding required to support the Department's Take Pride in America effort.

Take Pride in America is a national public awareness campaign designed to encourage wise use of the lands and resources shared by all Americans. Many Federal, State, local and private sector organizations are involved in this program. The focus of the campaign is at the grassroots level. The campaign is not intended .to be a vast federal program, but rather to provide a unifying theme for thousands of local and individual activities. Through national public service announcements, public-private partnerships, a national awards program and other activities, the campaign seeks to provide a boost for stewardship action and awareness efforts around the nation.

Drug-Free Workplace Program ($292,000): The bureau is requesting $292,000 for its share of the funding needed to support the Department's Drug-Free Workplace Program. This program was created to implement Executive Order 12564, Drug-Free Federal Workplace, establishing a policy against the use of illegal drugs by Federal employees, whether on duty or off duty. The funds requested cover a share of the costs of staff, training, applicant testing, accident follow-up testing, and necessary support items.

Crime Incident Reporting System ($500,000): The Uniform Federal Crime Reporting Act of 1988, P.L. 100-690, mandates "the Federal Bureau of Investigation to compile nationwide criminal statistics for use in law enforcement administration, operation, and management and to assess the nature and type of crime in the United States." The Integrated Police/Law Enforcement Management System (IPLEMS) must be modified to generate reports required under the amended law. The bureau is requesting $500,000 to accomplish this modification.

C. Safety Management

		(Dollar amounts in thousands)				
Program Elements		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Area Office Operations	$	142	140	142	184	+42
	(FTE)	(4)	(4)	(4)	(---)	(---)
Central Office Operations	$	473	466	477	477	---
	(FTE)	(7)	(7)	(7)	(--)	(--)
Total Operations	$	615	606	619	661	+42
	(FTE)	(11)	(11)	(11)	(---)	(---)

Objective: To provide a safe and healthful working environment for employees, to provide safe and healthful schools and dormitories for Indian children, and to ensure an optimum level of safety for the visiting public through the management of a safety and health program which minimizes the loss of human and material resources due to accidents or illnesses.

Base Program ($619,000; FTE 11):

Area Office Operations ($142,000; FTE 4): Safety management responsibilities at this level are essentially the same as those described below under Central Office Operations, however, functions at this level are also carried out by other program staff as a collateral duty.

Central Office Operations ($477,000; FTE 7): This division develops and maintains a bureauwide safety program which: (1) insures safe and healthful work locations; (2) provides technical guidance; (3) conducts research and provides engineering services on bureau safety and health programs; (4) provides technical assistance to Indian tribes and contractors in the establishment and maintenance of safety and health programs; (5) eliminates hazards which may cause accidents; (6) protects lives and physical well-being of bureau employees and users of bureau facilities; (7) promotes greater work efficiency by holding the number of accidents to a minimum; (8) insures lowest possible compensation costs through the administration of the Bureau FECA/OWCP Injury Compensation Program; (9) protects bureau property; and (10) promotes high standards of physical workers on all jobs in the bureau. The division administers the bureau motor vehicle license program, investigates accidents, and reviews Tort Claims for the Solicitor's Office.

It has final responsibility for motor vehicle operators' licenses, defensive driving training, and other training necessary to improve individual capability to meet bureau, state, and federal requirements. It is responsible for safety in the areas of water, transportation and transmission; reservoir and dam areas; and handling of radiological materials. It is the technical advisor on safe handling and use of explosives, pesticides, herbicides, toxic substances, and poison exposure. It also serves as the bureau's safety and health compliance office and administers safety and health codes and standards which have been adopted including fire codes, boiler and pressure vessel codes, building safety codes, and institutional safety and health standards. The division develops and maintains a data base consisting of statistics on accident, injury, fire and property damage. This information is stored in the main computer and is used to forecast trends, determine trouble areas, etc. The division serves as the Bureau Fire Marshall's Office and is responsible for administering the bureau Fire Prevention Program.

Changes from FY 1991 Base: (Dollars amounts in thousands)

Program Element		FY 1991 Base	FY 1991 Estimate	+/- Difference
Area Office Operations	$	142	184	+42

Area Office Operations (+$42,000): The change is the result of the application of the Indian Priority System at the area level. The changes by area are as follows:

Area Office	FY 1990 Enacted	FY 1991 Request	Difference
Anadarko Area	$ 0	$42,000	$+42,000
Billings Area	5,000	5,000	0
Phoenix Area	65,000	65,000	0
Albuquerque Area	44,000	44,000	0
Portland Area	28,000	28,000	0
TOTAL AREA PRIORITIES	$142,000	$184,000	$+42,000
ADJUSTMENTS:			
Adjustment for Improved Administrative and Staffing Efficiencies		-2,000	
FY 1991 Federal Pay Adjustment		2,000	
FY 1991 REQUEST		184,000	

Object Class Distribution - Management and Administration Subactivity

	FTE	Amount
Personnel compensation	+23	$+2,150,000
Personnel benefits		+ 280,000
Travel		+ 40,000
Supplies and materials		+ 50,000
Communication, utilities and miscellaneous charges		+ 42,000
Equipment and capital assets		+ 90,000
Other services		+ 880,000
Total	+23	$+3,532,000

Justification of Program and Performance

Activity: General Administration
Subactivity: Automatic Data Processing Services

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Central Management	$ (FTE)	6,083 (124)	6,000 (125)	6,193 (125)	7,193 (125)	+1,000 (---)
Central System Support	$	6,850	6,757	6,850	7,102	+252
Decentralized System Support	$ (FTE)	1,920 (---)	1,894 (41)	1,920 (41)	3,420 (48)	+1,500 (+7)
Data Telecommunications	$	---	---	---	2,948	+2,948
Equipment Acquisition	$	500	493	500	---	-500
Software Development and Training	$	700	691	700	---	-700
Hardware Requirements Task Force	$	500	493	500	---	-500
Systems Improvements Initiatives	$	400	395	400	---	-400
Field System Equipment Replacement	$	1,250	1,233	1,250	---	-1,250
Total Requirements	$ (FTE)	18,203 (124)	17,956 (166)	18,313 (166)	20,663 (173)	+2,350 (+7)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Automatic Data Processing	18,203	-247	17,956

This reduction will be accomplished by deferring hardware and software acquisition to a future year.

Objective: To operate a viable, computer-oriented data processing function in support of the bureau's programs, organizations, and administrative systems.

Overall BIA ADP Program

The office is responsible for developing, implementing and reviewing bureauwide policies, plans, processes, and activities related to ADP and data communications systems. It provides bureauwide data processing services through the operation and maintenance of a large-scale computer center, the National Technical Support Center (NTSC) in Albuquerque, NM and six satellite computer centers called Information Management Centers (IMCs), located in Aberdeen, SD; Albuquerque, NM; Anadarko, OK; Billings, MT; Phoenix, AZ and Portland, OR.

The NTSC uses one AMDAHL 470 V8 mainframe computer and two UNISYS A-10 mainframe computers linked to UNISYS B-1900 minicomputers (located at the IMCs) in a nationwide data communications network called AADIX. Among the programs and information systems supported by the computers and data communications network are: forestry, land records, real and personal property, irrigation, finance/accounting, personnel and payroll, and law enforcement.

ODS provides technical assistance and administrative control of bureau computer information technology, information resource management and hardware support. ODS will continue to direct needs assessment reviews to measure the priorities and scope of ADP services and to direct a user-oriented, cost effective program of ADP services. Management improvement plans, standard procedures and forms for requests for data services, project planning and programming requests have been established. These processes undergo periodic review for updating and improvement.

Base Program ($18,313,000; FTE 166): The Office of Data Systems (ODS) was established to meet the requirement for ADP services, to respond to the directives and guidance of the Congress and the Department, and to continue improving the quality of support to BIA programs. The categories in ADP services are as follows:

Central Management ($6,193,000; FTE 125): This funding is used for the costs of the central office staff, Washington, D.C., and the National Technical Support Center (NTSC), in Albuquerque, New Mexico. The central office provides national program direction through the Office of the Director, Policy and Planning Staff, and the ADP Central Management Division. The NTSC, the principal bureau computer center, provides services of computer operation, production control, and telecommunications management.

Central System Support ($6,850,000): This funding is used for the costs of the central ADP system, Area and Agency Distributed Interchange Executive (AADIX). Costs are attributed to Amdahl and Burroughs computer operations and maintenance. Additionally, this funding will be used to upgrade/replace existing, obsolete equipment, and software maintenance and lease, and software development by "Buy Indian" contractors. Systems supported include: Federal Financial System (FFS); Trust Fund Management System (TFMS); Facilities Construction Operations and Maintenance (FACCOM) System; Integrated Records Management System (IRMS); Land Records Information System (LRIS); Integrated Police/Law Enforcement Management System (IPLEMS); and Student Enrollment and Attendance System (SEAS), to name a few.

Decentralized System Support ($1,920,000; FTE 41): This funding covers salaries and operating expenses of the six Information Management Centers (IMC's), which provide data processing support to area offices, agencies, and schools.

Equipment Acquisition ($500,000): During FY 1991 this funding will support the Geographic Information System (GIS).

Software Development and Training ($700,000): During FY 1991 these funds will support performance improvement additions and anticipated increases in ADP workload.

Hardware Requiements Task Force ($500,000): This funding supports a comprehensive ADP hardware modernization plan.

Systems Improvements Initiatives ($400,000): During FY 1991 these funds will support implementation of ADP program improvements recommended by the Departmental Review of the BIA ADP Function.

Field System Equipment Replacement ($1,250,000): During FY 1991 these funds will be used to identify, procure, equip, and integrate with mainframe computer equipment state-of-the-art ADP hardware and software at Information Management Centers (IMC's).

Changes from FY 1991 Base: (Dollar amounts in thousands)

Program Element		FY 1991 Base	FY 1991 Estimate	+/- Difference
Central Management	$ (FTE)	6,193 (125)	7,193 (125)	+1,000 (---)
Central System Support	$	6,850	7,102	+252
Decentralized System Support	$ (FTE)	1,920 (41)	3,420 (48)	+1,500 (+7)
Data Telecommunications	$	0	2,948	+2,948
Equipment Acquisition	$	500	0	-500
Software Development and Training	$	700	0	-700
Hardware Requirements Task Force	$	500	0	-500
System Improvements Initiatives	$	400	0	-400
Field System Equipment Replacement	$	1,250	0	-1,250
Total Requirements	$ (FTE)	18,313 (166)	20,663 (173)	+2,350 (+7)

Central Management (+$1,000,000): This funding supports implementation of ADP program improvements recommended by the Departmental Review of the BIA ADP Function: contractor development of sound policies to govern ADP management decisions: a comprehensive hardware modernization plan; a system of accounting (not chargeback) to identify the cost of individual ADP applications; and, selected/benefits studies to justify major ADP initiatives in terms of benefits and savings. Funding will involve data collection, travel, software development and contracted analysis support.

Decentralized System Support (+$1,500,000; FTE +7): The funding increase is for the establishment of an outreach and technical information transfer program at the area office level, an image processing feasibility study in support of the Land Records Improvement Program and a variety of activities in support of the connectivity project. This also includes salaries and related expenses for an increase of 7 FTE to be stationed at area offices to act as an outreach, technical transfer and problem solving resource for area-related ADP problems; Land Records Information System (LRIS) support; and contract support to perform a needs assessment, feasibility studies and capacity planning.

Data Telecommunications (+$2,948,000): This amount represents recognition of costs incurred for Data Telecommunications not prevously identified in the ADP budget. This funding is used for the costs of the data telecommunications support staff (4 FTE), located at the National Technical Support Center (NTSC), lease and maintenance contracts of data communications equipment, and lease of data communications circuits.

Central System Support (+$252,000): The increase is for the procurement of mainframe peripheral storage devices to accommodate the burgeoning data storage demands of the Integrated Records Management and Integrated Police/Law Enforcement Management systems.

Equipment Acquisition (-$500,000): The change from base in this sub-element is for the purpose of placing the funding in the major program element entitled Central System Support.

Software Development and Training (-$700,000): The change from base in this sub-element is for the purpose of placing the funding in the major program element entitled Central System Support.

Hardware Requirements Task Force (-$500,000): The change from base in this sub-element is for the purpose of placing the funding in the major program element entitled Central Management.

Systems Improvements Initiatives (-$400,000): The change from base in this sub-element is for the purpose of placing the funding in the major program element entitled Central Management.

Field System Equipment Replacement (-$1,200,000): The change from base in this sub-element is for the purpose of placing the funding in the major program element entitled Central System Support.

Object Class Distribution - ADP Services

	FTE	Amount
Personnel compensation	+7	+$ 355,000
Personnel benefits		+ 49,700
Travel		+ 20,000
Supplies and materials		+ 8,000
Other services		+ 850,000
Equipment		+ 1,067,300
		+$2,350,000

Justification of Program and Performance

Activity:	General Administration
Subactivity:	Employee Compensation Payments

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
A. Workers' Compensation Payments	$	6,561	6,472	7,250	7,250	---
B. Unemployment Compensation	$	4,199	4,142	4,199	4,199	---
C. Federal Employees' Retirement System	$	7,721	7,616	---	---	---
Total Requirement	$	18,481	18,230	11,449	11,449	---

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Purusant to P.L. 99-177	FY 1990 Adjusted Approp.
Employee Compensation Payments	18,481	-251	18,230

These reductions for Workers' Compensation and Unemployment will be restored through reprogramming to the extent required to pay billings from the Department of Labor.

A. Workers' Compensation Payments

Objective: To provide for repayments of expenses to the Federal Employees' Compensation Fund.

Base Program ($7,250,000): The base program funding provides reimbursement to the Department of Labor for expenses of the Workers' Compensation Fund incurred during the 1989-90 expense period.

B. Unemployment Compensation

Objective: To provide repayment of unemployment compensation charges to the Department of Labor.

Base Program ($4,199,000): The base program funding provides reimbursement for unemployment compensation payments to former federal employees who are eligible for compensation benefits if affected by reduction in force, expiration of temporary appointment, or resignation due to permanent change in station.

Justification of Program and Performance

Activity: General Administration
Subactivity: Program Management

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
A. Construction Management	$	4,196	4,139	4,218	4,218	---
	(FTE)	(79)	(79)	(79)	(79)	(--)
B. Education Program Mgmt.	$	2,485	2,451	2,487	3,537	+1,050
	(FTE)	(30)	(30)	(30)	(30)	(--)
C. Liability Insurance Study	$	250	247	250	---	-250
	(FTE)	(---)	(---)	(---)	(---)	(---)
Total Requirements	$	6,931	6,837	6,955	7,755	+800
	(FTE)	(109)	(109)	(109)	(109)	(--)

A. Construction Management

Construction Staff	$	3,196	3,153	3,218	3,218	---
	(FTE)	(79)	(79)	(79)	(--)	(--)
Environmental Contracts Management	$	1,000	986	1,000	1,000	---
Total	$	4,196	4,139	4,218	4,218	---
	(FTE)	(79)	(79)	(79)	(--)	(--)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Construction Management	4,196	-57	4,139

This reduction will be accomplished by delaying the filling of vacancies and by reducing travel for technical assistance, project support and oversight.

Objective: To manage a program designed to operate, maintain, plan, design, construct, repair, and equip facilities and ensure compliance with safety and health codes.

Base Program ($4,218,000; FTE 79): The base program provides funding for the staff directing facilities operations of the bureau. These funds also cover personnel services, equipment, travel, management, construction, operations and maintenance accountability systems, and general logistical support. The base program includes funds for contract supervision and boiler inspection, as well as the Facilities Construction, Operation and Maintenance (FACCOM) management information system. Management of environmental contracts and assessments of environmental compliance and mitigation of environmental deficiencies will continue to be emphasized in FY 1991. The staff includes architects, engineers, O&M specialists, computer systems analysts, contract specialists, technical personnel, and administrative management and clerical support.

The Facility Management and Construction Center (FMCC), located in Albuquerque, New Mexico, is supervised by the Director, Office of Construction Management, Office of the Secretary. The Facility Management and Construction Center provides: planning, design, architectural, engineering, construction management, contracting, operation and maintenance oversight, training, equipping, evaluation, and other technical services. The Facility Management and Construction Center also develops design and construction specifications; reviews designs; establishes and implements guidelines for selecting equipment; and provides training in the use and maintenance of equipment and care of facilities.

B. Education Program Management

(Dollar amounts in thousands)

Program Element		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Central Office	$	2,485	2,451	2,487	3,537	+1,050
Operations	(FTE)	(30)	(30)	(30)	(30)	(---)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1991 Adjusted Approp.
Education Program Management	2,485	-34	2,451

This reduction will be accomplished by imposing a freeze on travel and delaying the final phase of the physical reconfiguration of the Central Office.

Objectives: To provide bureauwide direction and control by establishing or revising education policies and procedures that will result in the provision of a comprehensive and quality education program.

Base Program ($2,487,000; FTE 30): The Office of Indian Education Programs (OIEP), provides line direction for all education programs and systems through field line officers and through central office staff. These programs include: (1) elementary and secondary schools; (2) activities for adults through the Adult Education Program; (3) Tribally Controlled Community Colleges and the two Post Secondary institutions; and (4) Scholarship Programs for both graduate and undergraduate Indian students.

Authorities and responsibilities of the director include policy analysis; budget formulation and implementation; management systems development, implementation, and evaluation; program planning, oversight, and evaluation; allocation and monitoring of expenditures of appropriated and flow-through funds; and personnel management of education staff at all levels of the organization.

The director, assisted by support staff at the central office level, exercises line authority over field office education locations which, in turn, supervise bureau off-reservation residential schools, peripheral dormitories housing Indian students attending public schools, and local on-reservation day and boarding schools.

Change from FY 1991 Base: (Dollar amounts in thousands)

Program Element	FY 1991 Base	FY 1991 Estimate	+/- Difference
Education Program Management $	2,487	3,537	+1,050

Education Program Management (+$1,050,000): The components of this increase are as follows:

Central Office Staff (+$100,000): The increase will be used for travel and related expenses for the existing staff to place more emphasis on monitoring, evaluating and establishing a data base for education, in concert with the bureau's strategy for improving Indian education.

Education Research and Evaluation (+$400,000): Improved education performance requires that principals, teachers, students, and others be held accountable to parents, school boards and tribal officials for education results. Vacant positions in the Office of Planning, Oversight, and Evaluation will be filled with professional staff to support the improvement of education research, evaluation, and data collection efforts. Generational and beneficial changes in education must be based on reliable and widely respected data. Funds will be used for conducting research studies in the specific areas of: student dropouts (at risk students); an assessment of student, teacher, and principal performance; retainment of high-quality staff; and professional staff development. In addition, funds will be used to work out standards for measuring excellence rather than minimum requirements and to develop management techniques and policies that are geared directly toward improving performance. This office will also begin the development of a systematic mechanism for collecting data on all aspects of the lives of Indian children attending Bureau schools (including demographic and socioeconomic profiles). The data will also cover the settings in which children grow up (families, day care facilities, neighborhoods, and communities), the governmental systems (health, welfare, and justice), and private organizations that serve children.

Monitoring and Evaluation (+$600,000): This increase will fund a team of five persons, comprised of consultants from other agencies such as the Department of Defense Overseas Schools, the Department of Education, major universities, line officers and school personnel. The team will visit 45 schools each year or all schools on a four-year cycle, to do an indepth monitoring and evaluation of the schools' programs, specifically school operations, including, gifted and talented, exceptional education, flow-through programs; budget and finance at the school level; facilities operations and maintenance; and adherence to the minimum academic standards. The team will validate data from the schools such as the teacher/student ratios; in the case of boarding schools, dormitory attendant/student ratios; certification of teachers; condition of library books; etc. The result will be a comprehensive critique of the bureau's schools, and the information will be provided to school administrators, school boards, and tribes.

Close-up Foundation (-$250,000): The FY 1990 Congressional add-on of $250,000 for the Close-up Foundation grant is not continued in FY 1991. Since the Close-up Foundation receives significant funding from the Department of Education to support participation in this program, specific funding for Indian youth is not necessary.

Volunteers Program (+$200,000): The Department of Interior and its bureaus encourage volunteer stewardship throughout the country--including parks, refuges, around reservoirs and rivers, and on Indian reservations. For the Bureau of Indian Affairs, a total of $200,000 has been proposed for the volunteerism effort. Current authorization only allows BIA to use volunteers in schools.

The types of activities carried out by volunteers in BIA schools include the following:

- assistance in developing parent teacher organizations like the nationally known PTA (Parent Teacher Association);
- participation in early childhood education;
- membership on child abuse protection teams;
- development of communication skills for parents and children; and
- involvement in extra curricular activities.

Funds will also provide recognition programs for volunteers, training for volunteers, promoting opportunities for volunteers to support non-educational activities at post secondary schools, Tribally Controlled Community Colleges, and other educational programs.

C. Liability Insurance Study

(Dollar amounts in thousands)

Program Element		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Liability Insurance	$	250	247	250	---	-250
Study	(FTE)	(---)	(---)	(---)	(---)	(---)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1991 Adjusted Approp.
Liability Insurance Study	250	-3	247

This reduction will be accomplished by reducing travel and decreasing the purchasing of supplies.

Objectives: To conduct a study of the costs associated with extending coverage under the Federal Tort Claims Act to tribal contractors as provided by the recently enacted liability insurance provision.

Base Program ($250,000): The base program provides funding for a study to be performed identifying the costs and benefits of various liability coverage alternatives for tribal contractors, as directed by the FY 1990 Appropriations Committee.

Change from FY 1991 Base: (Dollar amounts in thousands)

Program Element		FY 1991 Base	FY 1991 Estimate	+/- Difference
Liability Insurance Study	$	250	---	-250

Liability Insurnace Study (-$250,000): The liability insurance study will be completed in FY 1990, therefore, no funds are required in FY 1991.

Object Class Distribution - Program Management

	FTE	Amount
Personnel compensation		$ + 109,000
Personnel benefits		+ 15,300
Travel		+ 60,000
Supplies and materials		+ 14,700
Equipment		+ 51,000
Other Services		+ 550,000
Total		$ + 800,000

Justification of Program and Performance

Activity: General Administration
Subactivity: Consolidated Training Program

		(Dollar amounts in thousands)				
Program Element		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Consolidated Training Program	$	840	829	840	1,040	+200
	(FTE)	(---)	(---)	(--)	(1)	(+1)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Consolidated Training Program	840	-11	829

This reduction will be accomplished by reducing training funds at central and area office levels.

Objectives: To provide a centrally controlled training program to comply with legal and regulatory requirements specifically applying to the Bureau of Indian Affairs; to train and qualify bureau employees, and particularly Indians, to plan and operate bureau programs.

Base Program ($840,000): This program is designed to raise the overall level of expertise in bureau programs, to address these needs through training in such program areas as: executive development, real property, real estate services, natural resources, finance, contracting, law enforcement, social services, forestry, automatic data processing, education, and trust fund management.

In addition to training employees in their current positions, results of an occupational needs survey indicate that BIA can expect retirement of 134 bureau managers in GS/GM-13 through Senior Executive Service (SES) positions over the next five years. The training program, therefore, must also be specifically targeted toward offsetting these anticipated losses.

High Potential Employees Development Program ($584,000): Employees in positions GS-5 through GS-12, who are identified as having potential to assume administrative, professional, technical or managerial positions, will participate in the High Potential Employees Development Program, regardless of the position which they occupy. Individual training plans, which give emphasis to the enhancement of professional and technical skills and include specific opportunities for administrative and managerial training, will be developed for each employee and will be structured to provide the employee the greatest opportunity to achieve as much of his/her full potential as possible. Priority in the program is given to shortage categories such as realty specialists, administrative staff, foresters, and appraisers. Development within this program is also designed to supplement the bureau's various programs to improve the technical skills of employees.

Executive Management Development Program ($256,000): The program funds training for employees who have been identified as having the potential for assuming the key management positions of the bureau. They are selected for the program through an assessment center process. The requested amount funds the assessment centers and all tuition, travel, and per diem costs related to training identified in each participant's development plan. The "pool" of participants will be used, along with other recruitment alternatives, to fill key management positions in the bureau. The Departmental Management Development Program ($85,000) and the Senior Executive Service Candidate Program ($25,000) are also funded from this component.

Changes from FY 1991 Base: (Dollar amounts in thousands)

Program Element		FY 1991 Base	FY 1991 Estimate	+/- Difference
Consolidated Training Program	$	840	1,040	+200
	(FTE)	(---)	(1)	(+1)

Consolidated Training (FTE +1): The increased FTE will be funded from the base amount for the Consolidated Training Program and will be used to provide one position to coordinate the Consolidated Training Program. This position will ensure the programs are admininstered to obtain the greatest training benefits at the best price, to ensure career advancement goals and training plans are compatible, and to monitor the training and developmental assignments.

Special Emphasis Training Program - Women and Minorities (+$200,000): While women and minorities participate fully in the training provided by the base program, this increase will be used to fund training essential to the career development needs of women and minorities to assist in their advancement or movement into managerial, professional, and technical positions in which they are currently under-represented.

Interior's goal is to involve women and minorities as employees, especially at management levels, and program participants in an effort to reach beyond minimum equal opportunity requirements. Interior bureaus are continually seeking ways to enhance the recruitment, training, and advancement within the Department of women and minorities, particularly in such critical professional areas as engineering, science, accounting and computer programming. For the Bureau of Indian Affairs, a total of $200,000 is being proposed for the women and minorities effort.

The program will focus on publicizing training and career development awareness activities offered through the bureau by both governmental and nongovernmental training facilities. Among these will be: sponsoring informational seminars featuring past and present women and minority participants of special career development programs; preparing related articles for newsletter publications; preparing career development literature for distribution at staff meetings; publicizing current career development programs and opportunities offered through the Department and the Bureau of Indian Affairs; sponsoring career development exhibits; scheduling informational meetings featuring: bridge position, Cooperative Education, and upward mobility programs; private scholarship and fellowship opportunities for these target groups; and networking. The program will also include EEO and Employee development program joint efforts at sponsoring awareness campaigns to recruit applications from women and minorities for Office of Personnel Management, Department of the Interior, and Bureau of Indian Affairs training and career development opportunities. The program will also feature regularly scheduled training sessions on career path counseling for this target group.

Object Class Distribution - Consolidated Training Program

	FTE	Amount
Personnel compensation..................................	+1 *	+$ 0
Personnel benefits......................................	*	+ 0
Travel..		+ 15,000
Supplies and materials..................................		+ 5,000
Other services..		+ 180,000
Total	+1	+$200,000

* This position is being funded from the base program, therefore, the amounts for personnel are not shown as part of the increase.

Justification of Program and Performance

Activity: General Administration
Subactivity: Tribe/Agency Operations

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
A. Executive Direction	$	8,239	8,127	8,311	8,743	+432
	(FTE)	(170)	(170)	(170)	(170)	(---)
B. Administrative Services	$	12,352	12,184	12,825	14,000	+1,175
	(FTE)	(352)	(352)	(352)	(372)	(+20)
C. Safety Management	$	246	243	247	316	+69
	(FTE)	(8)	(8)	(8)	(9)	(+1)
Total Requirements	$	20,837	20,554	21,383	23,059	+1,676
	(FTE)	(530)	(530)	(530)	(551)	(+21)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Tribe/Agency Operations	20,837	-283	20,554

This reduction will be accomplished by delaying the filling of vacancies and by reducing travel for technical assistance, project support and oversight.

A. Executive Direction

Objective: To provide daily leadership and line management for all bureau programs operated at or through the agency.

Base Program ($8,311,000; FTE 170): Executive Direction is defined as the immediate office of the agency superintendent. Funding at this level is determined by the priority setting process. None of the activities of this program are contracted.

Change from FY 1991 Base: (Dollar amounts in thousands)

Program Element		FY 1991 Base	FY 1991 Estimate	Difference (+ or -)
Executive Direction	$	8,311	8,743	+432
	(FTE)	(170)	(170)	(---)

Executive Direction (+$432,000): The change results from the application of the Indian Priority System at the tribe/agency level. Changes by area are as follows:

Area	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen	$ 1,031,000	$ 1,095,800	$+ 64,800
Anadarko	520,000	503,000	- 17,000
Billings	665,000	704,200	+ 39,200
Juneau	563,000	583,000	+ 20,000
Minneapolis	339,000	356,400	+ 17,400
Muskogee	883,000	975,200	+ 92,200
Phoenix	1,232,000	1,318,900	+ 86,900
Sacramento	435,000	405,200	- 29,800
Albuquerque	774,000	799,600	+ 25,600
Navajo	520,000	634,000	+114,000
Portland	1,001,000	1,033,700	+ 32,700
Eastern	276,000	262,000	- 14,000
Total Tribal Priorities	$ 8,239,000	$ 8,671,000	$+432,000
ADJUSTMENTS:			
One additional workday		+ 21,000	
Adjustment for Administrative and Staffing Efficiencies		-83,000	
FY 1991 Federal Pay Adjustment		+ 65,000	
Federal Employees Retirement System (FERS)		+ 69,000	
FY 1991 REQUEST		8,743,000	

B. Administrative Services

Objective: To provide those administrative systems/controls/expertise which directly support the operation of all agency programs.

Base Program ($12,825,000; FTE 352): The base program at the agency level should include one or more of the five functions listed and described below:

Personnel Services: (1) Provides assistance and advice to employees and managers regarding benefits, grievances, incentive awards, etc.; (2) assists in writing position descriptions, developing performance standards, and initiating personnel requests; and (3) insures that working personnel files and records are properly maintained and secured.

Property Management: (1) Manages, safeguards, and accounts for all agency owned or leased assets, including personal property and equipment, motor vehicles, and real property; (2) reviews and recommends the requisition, transfer/conveyance, and disposal of property and equipment; (3) maintains property controls, inventories, and reporting systems; and (4) provides direct property management support to tribal contractors and grantees.

Purchasing: (1) Procures all supplies, materials, equipment, and services necessary for the operation of agency programs; (2) reviews purchase orders for compliance with Federal procurement regulations; (3) evaluates goods and services for acceptability; and (4) maintains procurement files and records.

Budget and Finance: (1) Performs budget planning, recommends adjustment of funds, performs fund control and related activities involving the tribes in setting budgetary priorities and goals; (2) prepares and processes vouchers and other obligation documents, operates imprest cash and cash collections, resolves payroll problems; (3) maintains position and FTE control; and (4) insures that fiscal records and accounts are properly maintained.

General Services: Performs a variety of duties which are essential to the daily operation of the agency and involve considerable staff time and dollar outlay. Such services include but are not limited to: (1) management reports and controls; (2) Privacy Act and Freedom of Information Act coordination and reporting; (3) correspondence management and control; and (4) moving of equipment or office furniture.

Change from FY 1991 Base: (Dollar amounts in thousands)

Program Element		FY 1991 Base	FY 1991 Estimate	Difference (+ or -)
Administrative Services	$	12,825	14,000	+1,175
	(FTE)	(352)	(372)	(+20)

Administrative Services (+$1,175,000; FTE +20): The change results from the application of the Indian Priority System at the tribe/agency level. Changes by area are as follows:

Area	FY 1990 Enacted	FY 1991 Request	Difference
Aberdeen	$ 1,887,000	$ 1,846,800	$ - 40,200
Anadarko	516,000	591,000	+ 75,000
Billings	1,005,000	998,000	- 7,000
Juneau	573,000	835,600	+262,600
Minneapolis	840,000	963,200	+123,200
Muskogee	308,000	404,000	+ 96,000
Phoenix	1,555,000	2,132,200	+577,200
Sacramento	481,000	499,900	+ 18,900
Albuquerque	1,204,000	1,142,000	- 62,000
Navajo	1,332,000	1,487,000	+155,000
Portland	2,117,000	2,106,300	- 10,700
Eastern	534,000	521,000	- 13,000
Total Tribal Priorities	$12,352,000	$13,527,000	$+ 1,175,000
ADJUSTMENTS:			
One additional workday		+ 52,000	
Adjustment for Admininstrative and Staffing Efficiencies		-199,000	
FY 1991 Federal Pay Adjustment		+155,000	
Federal Employees Retirement System (FERS)		+290,000	
Funds for Klamath Field Office		+175,000	
FY 1991 REQUEST		14,000,000	

C. Safety Management

Base Program ($247,000; FTE 8): The base program provides for the development, implementation, and review of the agency level safety program. This program is not considered contractable under the Indian Self-Determination Act, P.L. 93-638.

Change from FY 1991 Base: (Dollar amounts in thousands)

Program Element		FY 1991 Base	FY 1991 Estimate	Difference (+ or -)
Safety Management	$	247	316	+69
	(FTE)	(8)	(9)	(+1)

Safety Management (+$69,000; FTE +1): The change results from the application of the Indian Priority System at the tribe/agency level.

Area	FY 1990 Enacted	FY 1991 Request	Difference
Billings	$ 2,000	$ 2,000	$ 0
Muskogee	6,000	6,000	0
Navajo	238,000	307,000	+ 69,000
Total Tribal Priorities	$ 246,000	$ 315,000	$ + 69,000
ADJUSTMENTS:			
One additional workday		+1,000	
Adjustment for Administrative and Staffing Efficiencies		-4,000	
FY 1991 Federal Pay Adjustment		+4,000	
FY 1991 REQUEST		316,000	

Object Class Distribution-Tribe/Agency Operations

	FTE	Amount
Personnel compensation	+21	+$ 892,000
Personnel benefits		+ 125,000
Travel		+ 70,000
Supplies and material		+ 85,000
Other services		+ 504,000
Total	+21	+$1,676,000

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
OPERATION OF INDIAN PROGRAMS
Program and Financing (in thousands of dollars)

Identification Code: 14-2100-0-1-999	1989 Actual	1990 Estimate	1991 Estimate
Program by activity:			
00.01 Education	239,398	260,480	282,168
00.02 Tribal Services	167,291	179,777	157,830
00.03 Navajo/Hopi Settlement Program	2,143	2,004	1,527
00.04 Economic Development Programs	41,957	10,612	10,866
00.05 Natural Resources Development	114,595	79,443	65,868
00.06 Trust Responsibilities	35,339	37,082	43,808
00.07 Facilities Management	82,451	89,191	87,161
00.08 General Administration	72,060	78,327	89,003
00.09 Tribe/Agency Operations	254,668	285,962	280,454
00.01 Total direct program	1,009,902	1,022,878	1,018,685
01.01 Reimburseable program	63,722	63,500	64,000
10.00 Total obligations	1,073,624	1,086,378	1,082,685
Financing:			
11.00 Federal funds	(61,779)	(62,000)	(62,000)
14.00 Non-Federal sources	(1,943)	(1,500)	(2,000)
21.40 Unobligated balance available, start of year	(4,393)	(4,877)	(3,487)
22.40 Unobligated balance transferred, net	(4,110)	--	--
24.40 Unobligated balance available, end of year	4,877	3,487	2,987
25.00 Unobligated balancing lapsing	1,432	--	--
39.00 Budget authority	1,007,708	1,021,488	1,018,185
Budget authority:			
40.00 Appropriation	1,026,361	1,035,534	1,018,185
40.00 Reduction pursuant to P.L. 99-177	--	(14,046)	--
41.00 Transferred to other accounts	(58,594)	--	--
42.00 Transferred from other accounts	39,941	--	--
43.00 Appropriation (adjusted)	1,007,708	1,021,488	1,018,185
Relation of obligations to outlays:			
71.00 Obligations incurred, net	1,009,902	1,022,878	1,018,685
72.40 Obligated balance, start of year	92,482	277,948	340,249
74.40 Obligated balance, end of year	(277,948)	(340,249)	(339,773)
77.00 Adjustments in expired accounts	63,918	--	--
90.00 Outlays	888,354	960,577	1,019,161

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
OPERATION OF INDIAN PROGRAMS
Object Classification (in thousands of dollars)

Identification Code: 14-2100-0-1-999	1989 Actual	FY 1990 Estimate	1991 Estimate
Direct Obligations:			
Personnel compensation:			
11.1 Full-time permanent..............	195,894	201,000	209,000
11.3 Other than full-time permanent...	75,568	80,000	83,000
11.5 Other personnel compensation.....	13,170	9,000	10,000
11.8 Special personal services payment	10,520	--	--
11.9 Total personnel compensation...	295,152	290,000	302,000
12.1 Personnel benefits: Civilian....	58,780	62,000	64,000
13.0 Benefits for former personnel....	871	1,000	1,000
21.0 Travel and transortation of persons..........................	19,134	19,000	19,900
22.0 Transportation of things.........	8,509	8,000	8,000
23.1 Rental payments to GSA...........	9,123	10,000	10,000
23.2 Rental payments to others.........	1,092	1,092	1,200
23.3 Communications, utilities, and miscellaneous charges............	24,120	25,000	25,000
24.0 Printing and reproduction........	1,382	1,000	1,000
25.0 Other services...................	405,352	418,786	392,585
26.0 Supplies and materials...........	40,458	31,000	31,000
31.0 Equipment........................	11,408	11,000	11,000
32.0 Lands and structures.............	2,516	--	--
33.0 Investments and loans............	60	--	--
41.0 Grants, subsidies, and contributions.....................	131,635	145,000	152,000
42.0 Insurance claims and indemnities.	211	--	--
43.0 Interest and dividends...........	99	--	--
99.0 Subtotal, direct obligations...	1,009,902	1,022,878	1,018,685
99.0 Reimbursable obligations.........	63,722	63,500	64,000
99.9 Total obligations..............	1,073,624	1,086,378	1,082,685

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
OPERATION OF INDIAN PROGRAMS
PERSONNEL SUMMARY

Identification Code: 14-2100-0-1-999	1989 Actual	1990 Estimate	1991 Estimate
Direct:			
Total number full-time permanent positions...........................	8,442	8,289	8,429
Total compensable workyears:			
Full-time equivalent employment....	10,911	10,335	10,387
Full-time equivalent of overtime and holiday hours..................	280	250	250
Reimbursable:			
Total number full-time permanent positions...........................	685	691	691
Total compensable workyears:			
Full-time equivalent employment....	807	869	837
Full-time equivalent of overtime and holiday hours..................	15	15	15

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
CONSTRUCTION

For construction, major repair, and improvement of irrigation and power systems, buildings, utilities, and other facilities, including architectural and engineering services by contract; acquisition of lands and interests in lands; preparation of lands for farming; maintenance of Indian reservation roads as defined in section 101 of title 23, United States Code; and construction, repair, and improvement of Indian housing, [$134,226,000] $103,099,000, to remain available until expended [: Provided, That $1,000,000 of the funds made available in this Act shall be available for rehabilitation of tribally owned fish hatcheries and related facilities: Provided further, That such amounts as may be available for the construction of the Navajo Indian Irrigation Project may be transferred to the Bureau of Reclamation]: Provided further, That not to exceed 6 per centum of contract authority available to the Bureau of Indian Affairs from the Federal Highway Trust Fund may be used to cover the road program management costs of the Bureau of Indian Affairs: Provided further, That $7,200,000 of the contract authority available to the Bureau of Indian Affairs from the Federal Highway Trust Fund for road construction to serve the Navajo Reservation shall be used by the Secretary of the Interior for road construction projects on land transferred or acquired under the Act of December 22, 1974, as amended (25 U.S.C. 640d-10): Provided further, That the foregoing shall not alter the amount of funds or contract authority that would otherwise be available for road construction to serve any Indian reservation or land other than the Navajo reservation [Hereafter, notwithstanding any other provision of law, amounts collected from grantees by the Secretary as grant repayments required under the Secretary's regulations for the Housing Improvement Program shall be credited in the year collected and shall be available for obligation under the terms and conditions applicable to the Program under that year's appropriation: Provided further, That all obligated and unobligated balances of "Road Construction" shall be merged with "Construction"].

(Department of the Interior and Related Agencies Appropriations Act, 1990, Public Law 101-121.)

[To fight the war on drugs, $4,000,000, to remain available until expended, for the provision of additional emergency shelters for Indian youth and for the construction of juvenile detention facilities.]

(Department of Transportation and Related Agencies Appropriations Act, 1990, Public Law 101-164.)

Justification of Proposed Language Changes

1. Deletion: ": Provided, That $1,000,000 of the funds made available in this Act shall be available for rehabilitation of tribally owned fish hatcheries and related facilities"

No funds are included in the FY 1991 budget for the rehabilitation of tribally owned fish hatcheries. The language is, therefore, unnecessary.

2. Deletion: ": Provided further, That such amounts as may be available for the construction of the Navajo Indian Irrigation Project may be transferred to the Bureau of Reclamation"

No funds are included in the FY 1991 budget for construction of the Navajo Indian Irrigation Project. The language is, therefore, unnecessary.

3. Addition: ": Provided further, That $7,200,000 of the contract authority available to the Bureau of Indian Affairs from the Federal Highway Trust Fund for road construction to serve the Navajo Reservation shall be used by the Secretary of the Interior for road construction projects on land transferred or acquired under the Act of December 22, 1974, as amended (25 U.S.C. 640d-10): Provided further, That the foregoing shall not alter the amount of funds for contract authority that would otherwise be available for road construction to serve any Indian reservation or land other than the Navajo reservation"

All road construction on Indian reservations should be funded from the Highway Trust Fund, including roads relating to construction on the "new lands" on the Navajo reservation in northern Arizona. At least $7.2 million of additional "new lands" road construction is needed in FY 1991. The bureau is proposing to fund these costs from the Highway Trust Fund.

4. Deletion: "hereafter, notwithstanding any other provision of law, amounts collected from grantees by the Secretary as grant repayments required under the Secretary's regulations for the Housing Improvement Program shall be credited in the year collected and shall be available for obligation under the terms and conditions applicable to the Program under that year's appropriation"

The language is no longer necessary. This provision was a permanent change in law.

5. Deletion: ": Provided further, That all obligated and unobligated balances of 'Road Construction' shall be merged with 'Construction'"

The language is no longer necessary. The bureau's Road Construction Account was transferred to its Construction Account in FY 1990, and all obligated and unobligated balances of the Road Construction Account were merged with the Construction Account.

6. Deletion: "To fight the war on drugs, $4,000,000, to remain available until expended, for the provision of additional emergency shelters for Indian youth and for the construction of juvenile detention facilities."

This language, which was contained in the FY 1990 Department of Transportation and Related Agencies Appropriations Act, is no longer necessary. Funds for the construction of juvenile detention centers are included in the BIA's FY 1991 Construction budget.

Appropriation Language and Citations

1. For construction, major repair, and improvement of irrigation and power systems,

For construction, major repair, and improvement of irrigation and power sytems, involving irrigation canals, wells, hydroelectric dams, and water and electrical distribution systems.

25 U.S.C. 13
25 U.S.C. 631(2)

25 U.S.C. 13 (The Snyder Act of November 2, 1921) is the basic authority under which the Secretary provides services, including construction of facilities, to support operating programs to federally recognized Indians. This Act also provides for the extension, improvement, operation, and maintenance of existing Indian irrigation systems and for development of water supplies. In addition, most of the major projects have specific authorizations.

25 U.S.C. 631(2), In order to further the purposes of existing treaties with the Navajo and Hopi Indians to provide facilities essential in combating hunger, disease, poverty, and demoralization among its members, section 2 includes the following:

> (2) Completion and extension of existing irrigation projects, and completion of the investigation to determine the feasibility of the proposed San Juan-Shiprock irrigation project.

2. buildings, utilities, and other facilities,

For construction, major repair, and improvement of all BIA buildings, utilities, and other facilities, including demolition of obsolete structures and consolidation of underutilized facilities.

25 U.S.C. 13
25 U.S.C. 450
25 U.S.C. 631(12), (14)

25 U.S.C. 450 (The Indian Self-Determination and Education Assistance Act) in Section 458 authorizes construction of public school facilities serving Indian children and permits expending not more than 25 percent of any funds appropriated for construction of previously private schools.

25 U.S.C. 631(12), (14) provide that in order to further the purposes of existing treaties with the Navajo and Hopi Indians to provide facilities essential in combating hunger, disease, poverty, and demoralization among its members, sections 12 and 14 include the following:

> (12) School buildings and equipment, and other educational measures.
>
> (14) Common service facilities.

3. including architectural and engineering services by contract;

The construction program includes the advertisement for architectural and engineering services through the Buy Indian Act, P.L. 93-638, and open market contracts.

25 U.S.C. 13
25 U.S.C. 450 (P.L. 93-638)

4. acquisition of lands and interests in lands;

The program includes the acquisition of land and interests in lands, as directed by Congress and judicial decisions.

25 U.S.C. 465

25 U.S.C. 465 provides that the Secretary of the Interior is authorized, in his discretion, to acquire, through purchase, relinquishment, gift, exchange, or assignment, any interest in lands, water rights, or surface rights to lands, within or without existing reservations, including trust or otherwise restricted allotments, whether the allottee be living or deceased, for the purpose of providing land for Indians.

5. preparation of lands for farming;

The construction program includes functions relating to preparation of lands for farming and irrigation, such as cleaning, leveling, terracing, and installation of irrigation systems.

25 U.S.C. 13
25 U.S.C. 465

6. maintenance of Indian reservation roads as defined in section 101 of title 23, United States Code;

25 U.S.C. 13, 318a
23 U.S.C. 101

25 U.S.C. 318a authorizes material, equipment, supervision and engineering in the survey, improvement, construction, and maintenance of Indian reservation roads.

23 U.S.C. 101 (The Surface Transportation Assistance Act of 1982) defines Indian reservation roads as "public roads, including roads on the Federal-aid systems, that are located within or provide access to an Indian reservation or Indian trust land or restricted Indian land which is not subject to fee title alienation without the approval of the Federal Government, or Indian and Alaska Native villages, groups, or communities in which Indians and Alaskan Natives reside, whom the Secretary of the Interior has determined are eligible for services generally available to Indians under Federal laws specifically applicable to Indians."

7. and construction, repair, and improvement of Indian housing,

The construction program also includes funds for housing construction, repair, and improvement to provide decent, safe, and sanitary housing to Indian communities.

25 U.S.C. 13

8. to remain available until expended

No Specific Authority

This appropriation involves construction projects which require more than a one-year cycle from their beginning stages through the actual construction of facilities. Therefore, funds are to remain available until expended.

9. Provided further, That not to exceed 6 percentum of contract authority available to the Bureau of Indian Affairs from the Federal Highway Trust Fund may be used to cover the road program management costs of the Bureau of Indian Affairs

25 U.S.C. 13, 318a
23 U.S.C. 203
101 Stat. 145 (P.L. 100-17)

25 U.S.C. 13 (The Snyder Act of November 2, 1921) is the basic authority under which the Secretary provides services, including road construction to federally recognized Indians. 25 U.S.C. 318a authorizes material, equipment, supervision and engineering in the survey, improvement, construction, and maintenance of Indian reservation roads.

23 U.S.C. 203 (The Surface Transportation Assistance Act of 1982) provides that funds authorized for Indian reservation roads shall be available for contract upon apportionment.

P.L. 100-17 (101 Stat. 145), the Surface Transportation and Uniform Relocation Assistance Act of 1987, provides funds from the Highway Trust Fund for Indian reservation roads to be used by the Secretary of the Interior.

10. Provided further, That $7,200,000 of the contract authority available to the Bureau of Indian Affairs from the Federal Highway Trust Fund for road construction to serve the Navajo Reservation shall be used by the Secretary of the Interior for road construction projects on land transferred or acquired under the Act of December 22, 1974, as amended (25 U.S.C. 640d-10)

23 U.S.C. 203
101 Stat. 145 (P.L. 100-17)

11. Provided further, That the foregoing shall not alter the amount of funds for contract authority that would otherwise be available for road construction to serve any Indian reservation or land other than the Navajo reservation

No Specific Authority

Program and Performance

1. Buildings and Utilities - This program provides for the construction and rehabilitation of bureau facilities.

2. Irrigation Systems - This program provides for the construction, extension, and rehabilitation of irrigation projects, dams, and related power systems on Indian reservations.

3. Housing - This program provides for the repair of housing for needy Indians.

4. Land Acquisition - This program provides for the acquisition of land and interests in lands for Indian tribes, as directed by Congress and by judicial decisions.

5. Fish Hatcheries Construction - This program provides for the rehabilitation of tribally owned fish hatcheries.

6. Employee Housing - This activity provides for a pilot program to address the repair needs for BIA employee housing.

7. Road Maintenance and Road Construction - The Road Maintenance Program provides safe and accessible public roads, which serve Indian reservations. The Road Construction Program provides roads on Indian reservations for safe and convenient transportation of people and goods.

8. Construction Contract Support - This program provides payment to tribes and to tribal organizations for overhead/administrative costs incurred as a result of their contracting for construction projects under Public Law 93-638.

BUREAU OF INDIAN AFFAIRS

Status of and Request for Budgetary Resources

Account: CONSTRUCTION - 14X2301

FY 1990 Budgetary Status

Budget Authority Available:		
Appropriation		$138,226
Reduction pursuant to P.L. 99-177		-1,376
Prior-year unobligated balance brought forward		43,463
Transferred from other accounts		23,393
Anticipated recovery of prior-year obligations		---
Total available for obligation		$203,706
Less anticipated obligations (by activity):		
1. Buildings and Utilities	$-42,000	
2. Irrigation Systems	-20,000	
3. Housing	-25,000	
4. Land Acquisition	-4,239	
5. Fish Hatcheries Rehabilitation	-1,652	
6. Employee Housing	-495	
7. Road Maintenance and Road Construction	-31,000	
8. Construction Contract Support	-9,717	
Total anticipated obligations		-134,103

FY 1991 Request

Anticipated unobligated balance brought forward		69,603
Plus increases proposed (by activity):		
1. Buildings and Utilities	$ 35,258	
2. Irrigation Systems	2,310	
3. Housing	20,224	
4. Employee Housing	1,000	
5. Road Maintenance and Road Construction	37,307	
6. Construction Contract Support	7,000	
Total increase proposed		103,099
Total anticipated BA available for obligation		$172,702

Analysis of Budgetary Resources by Activity
(Dollar Amounts in Thousands)

Account: Construction

Activity	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate	FY 1991 (+)(-) from 1990 Est.
1. **Buildings and Utilities**				
BA available for obligation:				
Appropriation............	33,650	38,092	35,258	-2,834
Unobligated bal. brt. fwd.	19,600	5,322	14,982	+9,660
Transfer in..............	11,967 1/	13,568 8/	---	-13,568
Transfer out.............	-22,583 2/	---	---	---
Total BA available.....	42,634	56,982	50,240	-6,742
Less obligations...........	-37,312	-42,000	-40,000	+2,000
Unoblig. bal., end of year.	5,322	14,982	10,240	-4,742
(FTE)	(20)	(20)	(20)	(--)
2. **Irrigation Systems**				
BA available for obligation:				
Appropriation............	20,910	29,281	2,310	-26,971
Unobligated bal. brt. fwd.	27,537	25,522	42,991	+17,469
Transfer in..............	8,754 3/	8,188 9/	---	-8,188
Transfer out.............	-13,648 4/	---	---	---
Total BA available.....	43,553	62,991	45,301	-17,690
Less obligations...........	-18,031	-20,000	-24,000	-4,000
Unoblig. bal., end of year.	25,522	42,991	21,301	-21,690
(FTE)	(54)	(56)	(41)	(-15)
3. **Housing**				
BA available for obligation:				
Appropriation............	22,823	22,239	20,224	-2,015
Unobligated bal. brt. fwd.	11,983	4,670	3,546	-1,124
Transfer in..............	9,202 5/	1,637 10/	---	-1,637
Transfer out.............	-15,912 6/	---	---	---
Total BA available.....	28,096	28,546	23,770	-4,776
Less obligations...........	-23,426	-25,000	-21,000	+4,000
Unoblig. bal., end of year.	4,670	3,546	2,770	-776
(FTE)	(83)	(80)	(80)	(--)
4. **Land Acquisition**				
BA available for obligation:				
Appropriation............	---	4,158	---	-4,158
Unobligated bal. brt. fwd.	863	81	---	-81
Transfer out.............	-700 7/	---	---	---
Total BA available.....	163	4,239	---	-4,239
Less obligations...........	-82	-4,239	---	+4,239
Unoblig. bal., end of year.	81	---	---	---

Account: Construction (Continued)

Activity	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate	FY 1991(+)(-) from 1990 Est.
5. Fish Hatcheries Rehabilitation				
BA available for obligation:				
Appropriation............	1,900	1,584	---	-1,584
Unobligated bal. brt. fwd.	59	68	---	-68
Total BA available.....	1,959	1,652	---	-1,652
Less obligations...........	-1,891	-1,652	---	+1,652
Unoblig. bal., end of year.	68	---	---	---
6. Employee Housing				
BA available for obligation:				
Appropriation............	---	495	1,000	+505
Unobligated bal. brt. fwd.	---	---	---	---
Total BA available.....	---	495	1,000	+505
Less obligations...........	---	-495	-1,000	-505
Unoblig. bal., end of year.	---	---	---	---
7. Road Maintenance and Road Construction				
BA available for obligation:				
Appropriation............	---	31,284	37,307	+6,023
Unobligated bal. brt. fwd.	8,692 11/	7,800	8,084	+284
Total BA available.....	8,692	39,084	45,391	+6,307
Less obligations...........	-892	-31,000	-31,000	---
Unoblig. bal., end of year.	7,800	8,084	14,391	+6,307
(FTE)	(92)	(503)	(508)	(+5)
8. Construction Contract Support				
BA available for obligation:				
Appropriation............	---	9,717	7,000	-2,717
Unoblig. bal. brt. fwd...	---	---	---	---
Total BA available.....	---	9,717	7,000	-2,717
Less obligations...........	---	-9,717	-7,000	+2,717
Unoblig. bal., end of year.	---	---	---	---
Account Totals				
BA available for obligation:				
Appropriation................	79,283	136,850 12/	103,099	-33,751
Unoblig. bal. brt. fwd.......	68,734	43,463	69,603	+26,140
Transfers in.................	29,923	23,393	---	-23,393
Transfers out................	-52,843	---	---	---
Total BA available.........	125,097	203,706	172,702	-31,004
Less obligations..............	-81,634	-134,103	-124,000	+10,103
Unoblig. bal., end of year.....	43,463	69,603	48,702	-20,901
(FTE)	(249)	(659)	(649)	(-10)

1/ Transfer in of $11,967,357 from the OIP account to repay FY 1988 fire costs.
2/ Transfer out of $22,583,000 to the OIP account for FY 1989 fire costs.

3/ Transfer in of $8,732,214 from the OIP account to repay FY 1988 fire costs of $7,000,000 and FY 1987 fire costs of $1,732,214, and transfer in of $21,600 from the OIP account for Federal Employee Retirement System (FERS) costs.

4/ Transfer out of $13,648,139 to the OIP account for FY 1989 fire costs.

5/ Transfer in of $9,129,429 from the OIP account to repay FY 1988 fire costs and transfer in of $72,200 from the OIP account for FERS costs.

6/ Transfer out of $12,911,286 to the Navajo and Hopi Indian Relocation Commission pursuant to P.L. 100-666 (102 Stat. 3929), the Navajo and Hopi Indian Relocation Amendments of 1988, and transfer out of $3,000,000 to the OIP account for FY 1989 fire costs.

7/ Transfer out of $700,000 to the OIP account for transfer to the San Carlos Apache Tribe for economic development, pursuant to P.L. 100-446 (102 Stat. 1795).

8/ Transfer in of $13,568,000 from the Bureau of Land Management (BLM) to repay FY 1989 fire costs.

9/ Transfer in of $8,188,000 from BLM to repay FY 1989 fire costs.

10/ Transfer in of $1,637,000 from BLM to repay FY 1989 fire costs.

11/ The unobligated balance of $8,691,577 is from the Road Construction Account, which has been transferred to the Construction Account.

12/ The figure of $136,850,000 is the net FY 1990 enacted amount, when the G-R-H sequestration of $1,376,000 is subtracted from the appropriated amount of $138,226,000.

BUREAU OF INDIAN AFFAIRS
Summary of Requirements
(Dollar Amounts in Thousands)

Appropriation: Construction	FTE	Amount	FTE	Amount
Appropriation currently available, 1990......			659	$138,226
Reduction pursuant to P.L. 99-177............			0	-1,376
Adjusted FY 1990 Appropriation...............			659	$136,850
Adjustments to base:				
Adjustment for 1990 Impact of P.L. 99-177....	+3	+1,376		
Adjustment for one additional paid day in FY 1991..................................		+ 46		
Adjustment for Improved Administrative Efficiency................................		- 169		
Adjustment for Staff Efficiency..............	-3	- 155		
Adjustment for increased cost of Federal Employees Retirement System................		+ 849		
Additional Cost in 1991 for the 1991 Pay Raise		+ 284		
Total adjustments to base....................			0	2,231
1991 Base Budget.............................			659	5,488
Program Changes..............................			-10	97,611
Total Requirements (1991 Estimate)...........			649	$103,099

CONSTRUCTION

Justification of Adjustments to Base

$000 FTE

Adjustment for 1990 Effect of P.L. 99-177 + 1,376 + 3

The Balanced Budget and Emergency Deficit Control Act of 1985 (P.L. 99-177), as amended, required a reduction in non-exempt programs in FY 1990. Since the reduction applies to FY 1990 only, this adjustment is made to allow a more comparable basis for showing program changes from FY 1990 to FY 1991.

Adjustment for One Additional Paid Day in FY 1991 + 46

The increase in personnel compensation results from there being one more paid day in FY 1991 than in FY 1990.

Adjustment for Administrative Efficiency - 169

The Department is proposing to decrease spending for consultants, travel, overtime, supplies, and equipment by about 5 percent to improve administrative efficiency and place greater priority on 1990 program initiatives. Specific reductions are proposed in the following areas:

Consultants.............	-$ 2
Travel..................	- 20
Overtime................	- 5
Supplies................	- 90
Equipment...............	- 52
Total.................	-$169

Adjustment for Staffing Efficiency - 155 - 3

Savings are proposed from a planned reduction in the average grade achieved by filling vacant positions at an average of one grade lower than previously filled and from taking into account an expected additional lapse of 30 days before filling positions that become vacant in 1991. Specific reductions follow:

Average Grade............	-$153
Lapse....................	- 2
Total..................	-$155

FERS Retirement Costs + 849

The adjustment is for the increase in estimated retirement costs resulting from the continuing growth in the relative proportion of FERS employees in the bureau work force.

Additional Cost in 1991 of the 1991 Pay Raise	+ 284

The adjustment is for the additional amount needed in 1991 to cover 40 percent of the additional three quarter's cost of the estimated 3.5 percent pay raise effective in January 1991. Of this amount, $241,000 is for the general schedule pay and $43,000 is for the wage board pay. The 1991 cost of the remaining 60 percent will be absorbed in FY 1991.

Summary of Requirements

	FY 1990 Appropriation		FY 1991 Base Budget		FY 1991 Estimate		Change From Base		Change From 1990	
	FTE/T	Amount	FTE/T	Amount	FTE/T	Amount	FTE/T	Amount	FTE/T	Amount
Buildings and Utilities.........	20	38,475	20	0	20	35,258	0	35,258	0	(3,217)
Irrigation Systems/ Dams..............	56	29,575	56	2,086	41	2,310	(15)	224	(15)	(27,265)
Fish Hatcheries Rehabilitation...	0	1,600	0	0	0	0	0	0	0	(1,600)
Housing............	80	22,463	80	3,402	80	20,224	0	16,822	0	(2,239)
Employee Housing...	0	500	0	0	0	1,000	0	1,000	0	500
Road Maintenance and Construction.	456	31,598	456	0	461	37,307	5	37,307	5	5,709
Road Construction (Reimbursable Program)	47	0	47	0	47	0	0	0	0	0
Construction Contract Support..........	0	9,815	0	0	0	7,000	0	7,000	0	(2,815)
Land Acquisition...	0	4,200	0	0	0	0		0	0	(4,200)
FTE Allocation from FHWA.............	[573]	0	[573]	0	[573]	0	0	0	0	0
Staffing Efficiency FTE Reduction....	0	0	-3	0	-3	0	0	0	0	0
1990 Impact of P.L. 99-177......	0	0	3	0	3	0	0	0	0	0
TOTAL APPROPRIATION	659	138,226	659	5,488	649	103,099	(10)	97,611	(10)	(35,127)

Justification of Program and Performance

Account: Construction
Activity: Buildings and Utilities

(Dollar amounts in thousands)

Program Elements	FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Estimate	Inc. (+) Dec. (-) from Enacted
A. Education Projects	$ 9,585	9,490	8,170	-1,415
B. Law Enforcement Projects	$ ---	---	2,500	+2,500
C. Advance Planning and Design	$ 1,000	990	500	-500
D. Telecommunications Improvement and Repair	$ 765	757	700	-65
E. Facilities Improvement and Repair	$ 23,125 (FTE) (20)	22,895	23,388 (20)	+263 (--)
F. Substance Abuse Construction	$ 4,000	3,960	---	-4,000
Total Requirements	$ 38,475 (FTE) (20)	38,092	35,258 (20)	-3,217 (--)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Buildings and Utilities	38,475	-383	38,092

This reduction will be accomplished by a decrease in the construction and repair of buildings and utilities in all program areas. The effect of these actions will be to reduce the scope of work in certain construction projects that do not involve the abatement of identified critical life safety code deficiencies. Additional savings will be generated by performing value engineering life-cycle cost studies during the planning and design phase of project development.

A. Education Projects

Objective: To provide for the planning, design, and construction of adequate school facilities for Indian children.

Justification: It is the responsibility of the Bureau of Indian Affairs to provide adequate and safe educational facilities to eligible communities. Schools may be bureau operated or operated by tribal organizations under contract.

New construction funds are being requested for two education projects, which were identified as first and third on the FY 1991 priority list for new school construction. The Office of Construction Management (OCM) issued guidelines entitled, "Instructions and Applications for new School Construction," and a notice was published in the Federal Register on February 3, 1988. The notice stated that all applications will be reviewed and ranked in accordance with the criteria outlined in the guidelines. These criteria established a priority system for use in ranking new education construction applications. The criteria were published in the Federal Register on April 14, 1988, and were used in reviewing and ranking applications for new school construction.

Project descriptions for the two new school construction projects for which funds are requested follow. Estimated costs are subject to site validation studies, which are currently underway.

Education Construction Project Justifications

Project Title: Dunseith Elementary School, North Dakota

Estimated Cost: $4,830,000

This project will provide for a new school for students in grades K-6, located in Dunseith, North Dakota. The present main school structure is 48 years old and in poor condition. It was designed to accommodate only 95 students. Current enrollment is 143 students. At the present time, 100 percent of the students are considered to be unhoused since enrollment far exceeds design capacity and because of the existing health and safety hazards. The second story and the basement of the main structure are currently abandoned. The structure does not meet safety and handicap requirements. Funds needed to meet those requirements would exceed replacement costs.

Academic building	$3,240,000
Site and utilities	650,000
Contingency	390,000
Construction management and inspection cost	230,000
Equipment/furnishing cost	320,000
Total Estimated Project Cost	$4,830,000

Project Title: Pine Ridge High School, Phase II, South Dakota

Estimated Cost: $3,340,000

This project will provide for Phase II of the construction of the Pine Ridge High School and for the completion of the overall project to replace the present building, which is in a deteriorated condition, with existing health and safety hazards to the 700 students and staff. The completed project will eliminate the existing shortage of classrooms, science/computer labs, and mechanical arts shops, as well as the health and safety hazards.

	Total Cost	Phase II
Academic building	$5,000,000	$2,165,000
Site and utilities	550,000	275,000
Contingency	500,000	250,000
Construction management and inspection cost	200,000	100,000
Equipment/furnishing cost	550,000	550,000
Total Estimated Project Cost	$6,800,000	$3,340,000

B. Law Enforcement Project Justification ($2,500,000)

This new construction initiative will be based on the completed Planning of New Institutions (PONI) studies on the highest ranked of the 46 juvenile detention facilities, as published in the Federal Register on July 12, 1988. Projects will be funded in priority order to the limit of available funds.

C. Advance Planning and Design

Justification ($500,000): Funds are requested in this program element in FY 1991 to provide for planning and design activities for the FY 1992 construction year. The request includes funds for both the educational and law enforcement construction programs.

D. Telecommunications Improvement and Repair

Justification ($700,000): Under this program, significant progress has been made in bringing the Bureau of Indian Affairs into compliance with changes resulting from recent judicial decisions and in line with technological advances. It is anticipated that these funds will continue to be used to replace antiquated and ineffective radio communications equipment critical to the life safety of the personnel in law enforcement, fire suppression, and school transportation. This equipment and the telecommunications system support facility management, law enforcement, forestry, land operations, education, dam safety, irrigation, and other users.

E. Facilities Improvement and Repair (FI&R)

Objectives:

1. To reduce facilities improvement and repair needs, with emphasis on safety needs as they arise;
2. To consolidate underutilized facilities, to maximize the use of existing facilities, and to reduce continuing costs of repair, operation, and maintenance;
3. To repair or refurbish facilities (e.g., renovations, improvements, demolitions, or additions) in lieu of totally new construction, where justified;
4. To continue the minor repair and emergency repair programs.

Justification ($23,388,000; FTE 20): The Bureau of Indian Affairs manages approximately 3,400 buildings (other than quarters) throughout the United States. The improvement and repair of these structures is a continuing effort. Opportunities for cost savings exist through the disposition of unnecessary facilities of all kinds. Unused facilities that are unsafe or determined to be in excess of bureau needs will be disposed of by transfer, sale, or demolition.

In addition to accomplishing needed repairs and improvements, correcting functional deficiencies, and modernizing facilities to meet today's standards, requirements for compliance with laws and regulations concerning safety, environmental protection, energy conservation, and the handicapped must be met. Repair tasks include updating buildings and utilities to correct existing functionally unsafe and/or unsanitary conditions and bringing various structures up to regulatory requirements. Emergency repairs are also carried out to correct unforeseen problems. Installation of equipment is provided to meet program requirements in instances where facilities are expanded or functionally changed.

Funds will also be used for advance planning and design to facilitate implementation of future repair and improvement projects. The status of the FY 1989 projects is shown in the following table. The FY 1990 FI&R program list was published in the Federal Register in November 1989.

FY 1989 Program

The following projects are under construction or have been completed:

- Ahfachkee Elementary School (FL)
- Ft. Totten School Roof Replacement (ND)
- Turtle Mountain Elementary School Reroof (ND)
- Cherokee Headquarters and Elementary Day School Roof Repair (NC)
- Miccosukee Indian School Reroof (FL)
- Navajo (AZ and NM) In-ground Gas Line Replacement, Phase II (7 locations)
- Sherman High School Roof Repair (CA)
- Ft. Apache Agency/Cibecue Roof Repair (AZ)
- Hotevilla Shop Roof Repair (AZ)
- Rosebud Dorms Code Compliance (SD)
- Santa Fe Indian School Roof Repair, Phase I (NM)
- Pine Hill Water Treatment Plant Code Compliance (NM)
- Haskell Indian Junior College (KS)
- Sequoyah Administration Building Reroof (OK)
- Dzilth-Na-O-Dith-Hle School (NM)
- Navajo Area Reroof - 8 locations (AZ, NM)

Three projects are in construction procurement:	Obligation Dates Scheduled
- Flandreau Indian School, Phase IA (SD)	3/90
- Ft. Hall Headquarters and Elementary School (ID)	2/90
- Sequoyah Dormitory Reroof (OK)	2/90
Two projects are in design:	
- Mariano Lake School (NM)	3/90
- Flandreau Indian School, Phase IB (SD)	4/90

FY 1990 Program

The FI&R project list for FY 1990 is as follows:

- Bureauwide Code Compliance
- Bureauwide Roof Repair
- Multi-Area Telecommunications Improvement and Repair

- Navajo Areawide Gas Line Replacement (AZ, NM)
- Laguna Elementary School (NM)
- Haskell Indian Junior College (KS)
- Riverside Indian School (OK)
- Lac Courte Oreilles Ojibwa School (WI)
- Hannahville Indian School (MI)
- Carter Seminary (OK)
- Jones Academy (OK)
- Sequoyah High School (OK)
- Winslow Dormitory (AZ)
- Santa Rosa Ranch School (AZ)
- Chemawa Indian School (OR)
- Lummi Tribal School (WA)

FACILITY IMPROVEMENT AND REPAIR PROGRAM JUSTIFICATION FOR FY 1991

Description:

Construction	$14,588,000
Construction Support	8,800,000
Total FY 1991 Program	$23,388,000

The $14,588,000 requested is the amount required to fund estimated FI&R construction contract awards. The $8,800,000 requested for construction support includes design and engineering costs; the emergency repair and minor improvement and repair programs; and equipment, construction contingency, and management inspection costs.

Construction

Justification ($14,588,000): Inclusion of the FY 1991 project list continues the objective established in the Special Report submitted to the Committee on Appropriations in June 1987, and demonstrates improvements made in facilities management in the areas of advance planning, field validation, and prioritizing of projects, closer coordination with other program managers, and improved scheduling. The FY 1991 program includes:

-- The repair and/or replacement of roofs, including insulation, where required, to reduce the rate of contingent damage from poorly functioning roof systems. Previous initiatives are proposed as continuing annual programs.

-- The extension of the program for mitigation of code deficiencies to reduce the existing backlog and to comply with additional code requirements in the future.

The following is the FY 1991 project list and estimated cost, followed by project descriptions:

Bureauwide

- Mitigation of Code Deficiencies	$1,930,000
- Roof Repair/Replacement	1,613,000
	$3,543,000

Aberdeen Area

- Flandreau Indian School, Phase II (SD)	$ 2,550,000
- Lower Brule School (SD)	980,000
- Ft. Thompson School (SD)	255,000
	$ 3,785,000

Albuquerque Area

- Jicarilla Agency (NM)	$ 250,000

Anadarko Area

- Kickapoo Nation Schools (KS)	$ 315,000
- Haskell Indian Junior College (KS)	250,000
	$ 565,000

Billings Area

- Crow Agency (MT)	$ 445,000

Eastern Area

- Cherokee Elementary School (NC)	$ 160,000

Minneapolis Area

- Oneida Tribal School (WI)	$ 400,000

Muskogee Area

- Sequoyah School (OK)	$ 285,000

Navajo Area

- Crownpoint Community School (NM)	$ 740,000
- Pine Springs School (AZ)	1,120,000
- Navajo Gas Lines (NM, AZ)	525,000
- Richfield Dormitory (UT)	220,000
	$ 2,605,000

Phoenix Area

- Blackwater School (AZ)	$ 770,000
- Sells Headquarters (AZ)	220,000
- Salt River Headquarters and Salt River School (AZ)	310,000
	$ 1,300,000

Portland Area

- Quileute Tribal School (WA)	$ 850,000
- Paschal Sherman Indian School (WA)	400,000
	$ 1,250,000

TOTAL	$ 14,588,000

Project List and General Description

BUREAUWIDE

Mitigation of Code Deficiencies $1,930,000

This program will concentrate resources for mitigating backlog deficiencies of building codes and/or regulations on a bureauwide basis. Items in this program are violations within the following codes: American National Standards Institute/ National Fire Protection Association, and the Uniform Building Codes. (The applicable educational facilities will be governed by the code requirements for existing education occupancies - Chapter II.) Due to the increasing environmental regulations related to facilities and utility systems, mitigation of environmental deficiencies will be emphasized in this program. This program is a continuation of the program begun in the Aberdeen Area in FY 1988.

It is planned that this program will continue as an annual program for mitigation of currently identified deficiencies. Priorities are being established in order to ensure that the more serious problems are corrected first. Code compliance will also continue as a high priority in other FI&R projects.

Roof Repair/Replacement Program $1,613,000

This program is a continuation of an annual program to reduce the backlog of deficiencies, to arrest associated deterioration, and to prevent adverse effects on programs.

This concentration of resources will provide for mitigation of roof problems (which have been placed in priority order) to be corrected more quickly.

FI&R Project List

ABERDEEN AREA $3,785,000

Flandreau Indian School, Phase II (SD)........................$2,550,000

This project will provide for the second increment of a broad upgrading of facilities at this boarding high school, which has a 550-student capacity. Based on an FY 1988 feasibility study, this project will provide for the demolition of 17 seriously defective buildings (consisting of 83,085 square feet), as well the connecting underground steam distribution system and removal of asbestos materials. The project will also provide for replacement square footage and will address code deficiencies, handicapped accessibility, and maintenance defects in existing buildings.

Lower Brule (SD)..$ 980,000

This project will provide for repair of damage caused by unstable soil conditions. Repair will include stabilizing foundation systems and replacing floors, replacing slabs on grade, correcting damaged walls, doors, frames, and ceilings. Identified revisions will also be made to heating and sprinkler systems, life safety backlog deficiencies will be corrected, and reroofing will be done.

Fort Thompson (SD)..$ 255,000

This project will provide for the stablization of foundations and floors; repair/replace floors and floor coverings, ceilings, and walls damaged by unstable soils; and provide for life safety electrical revisions and roof repair.

ALBUQUERQUE AREA $ 250,000

Jicarilla Agency (NM)...$ 250,000

This project will provide for the improvement of the water distribution system and for replacement of the existing 3-inch asbestos cement water line with new 6-inch PVC fire hydrants, valves, and fittings necessary for a fully operational system.

ANADARKO AREA $ 565,000

Kickapoo Nation School (KS).....................................$ 315,000

This project will provide for general repairs and renovations, replacement or repair of windows, insulation of hot water pipes, waterproofing of the basement, repair of exterior walls, and for identified fire-rated doors.

Haskell Indian Junior College (KS)..............................$ 250,000

This project is part of a continuing series of improvements which will upgrade this total school facility and support needed improvements until the Master Plan (education/facilities) is completed and can be used to guide priorities for future work.

BILLINGS AREA $ 445,000

Crow Agency (MT)..$ 445,000

This project will provide for renovation and repair of several buildings. The work will include the provision of restroom facilities for the handicapped; replacement of toilet fixtures, floor coverings, doors, and HVAC systems; repair of masonry, doors, and insulation; as well as the provision of waterproofing and roof replacement.

EASTERN AREA $ 160,000

Cherokee Headquarters...$ 160,000

This project will provide for the continuation of ongoing improvements, including energy efficiency. This particular project will also provide for installation of a new HVAC system.

MINNEAPOLIS AREA $ 400,000

Oneida Tribal School (WI).......................................$ 400,000

This project will provide for the renovation of the first and second floors, including code related and other improvements. Work will include rewiring, egress for the handicapped, plumbing improvements, window reglazing, and new finishes.

MUSKOGEE AREA $ 285,000

Sequoyah Indian School (OK)..$ 285,000

This project will provide for renovation and reroofing of two buildings and for paving of identified streets.

NAVAJO AREA (including Navajo Gas Lines) $2,605,000

Crownpoint Community School (NM)..................................$ 740,000

This project will provide for the general upgrading and code compliance of several facilities at this location. The improvements will include access for the handicapped and code compliance for four buildings, reroofing of three buildings, and site improvement related to repair of water systems.

Pine Springs Boarding School (AZ)................................$1,120,000

This project will provide for the general upgrading and code compliance of the main facilities at this location. The improvements will include replacement of water and sewer mains, relocation of fuel lines, upgrading of the waste disposal system, provision of restroom facilities for the handicapped, ramps, new roofs, and new flooring.

Navajo Area Gas Lines (AZ, NM)....................................$ 525,000

This project will continue a program of rehabilitation and improvement of BIA-owned gas distribution systems at various locations within the Navajo Area. The extent of corrective work is based on engineering surveys and recommendations, which are considered in priority order as safety requirements.

Richfield Dormitory (UT)..$ 220,000

This project will provide for code compliance, including provision of access for the handicapped, smoke barriers and partitions, reroofing, and waterproofing.

PHOENIX AREA $1,300,000

Blackwater School (AZ)..$ 770,000

This project will provide for three buildings to have replacement of floor covering, insulation, toilets and ramps for the handicapped, electrical system improvements, and a new HVAC system. It will also provide for kitchen remodeling, upgrading fire protection, plumbing improvements, rehabilitation of the fire alarm system, and two additional classrooms.

Sells Headquarters (AZ)...$ 220,000

This project will provide for general renovations, including replacement of siding, new doors and frames, additional partitions, a new shop, minor roof repair, caulking, and painting, to make the facility more weather tight.

Salt River Headquarters and Salt River School (AZ)...............$ 310,000

This project will provide for the renovation of 10 buildings at this location. The work will include code compliance for the handicapped (providing ramps to buildings and wider doors to restrooms), painting, roof repair, new fascia, exterior metal doors, frames, insulation of walls and ceilings, replacement of ceilings, repair of sewer and plumbing, and electrical work, including emergency lighting.

PORTLAND AREA $1,250,000

Quileute Tribal School (WA).......................................$ 850,000

This project will provide for the general upgrading of nine buildings. It will provide for ramps and restrooms for the handicapped, fire alarms, new exit stairs, electrical wiring, and upgrading to abate code violations.

Paschal Sherman Tribal School (WA)................................$ 400,000

This project is part of continuing improvements at this school. The project will provide for a kitchen/dining facility and all related utility and site work.

FI&R TOTAL, FY 1991...$14,588,000

Construction Support ($8,800,000)

Since FY 1987, major attention has been given to the mitigation of critical life safety (S-1) work items, through all of the program elements, as the first priority. These S-1 work items will continue to be a first priority for mitigation in the FI&R projects. As a result of the completion of the Asbestos Hazard Emergency Response Act, all bureau and contract or grant schools have been inspected. The MI&R program will, in addition, continue to correct the highest priority potential hazards identified in education buildings. Additional contracts for environmental assessments will be funded from within this program element.

In addition, as environmental assessment data become available as the basis for management plans, funding will be used for mitigation of environmental hazards in accordance with the management plan.

Emergency Repair ($500,000): Emergency repair needs result from unforeseen occurrences and require immediate corrective action to allow the day-to-day operations of the various bureau programs to continue. The projects are completed through force account or emergency contract for the work involved. Examples include repairing or replacing mechanical and utility system components and correcting imminently hazardous safety conditions and fire or storm damage.

Minor Repair ($4,100,000): These funds will be used for priority responses to safety deficiencies, beginning with identified Safety Critical (S-1) work items and will also include hazardous asbestos abatement under established management plans, high priority environmental hazards under similar management plans, boiler repair needs, and other required backlog reductions to meet local priorities. Work will be accomplished at the local level, with minimum design assistance, for work items that are beyond the scope of the Facilities Operation and Maintenance program.

Advance Planning and Design ($1,500,000): Funds will be used for feasibility studies, contracts for investigations/reports, environmental assessments, development of project architectural/engineering construction documents and Value Engineering studies. Advance planning permits earlier construction contract awards in the fiscal year, which provides a more efficient use of appropriated funds.

Demolition/Reduction of Excess Space ($500,000): Funds will be used to identify and proceed with demolition/disposition of bureau facilities that are excess to needs. Often excess buildings have been abandoned due to uneconomical rehabilitation costs and are boarded up; however, they present a hazard to curious children, vagrants and others, and should be demolished.

The remaining amount of $2,200,000 for Construction Support includes funds for project contingency ($1,200,000); management and inspection ($750,000); and equipment ($250,000).

Justification of Program and Performance

Account: Construction
Activity: Irrigation Systems

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Project Construction	$	22,361	22,139	---	500	+500
Engineering and Supervision	$ (FTE)	1,664 (56)	1,647	2,036 (56)	1,710 (41)	-326 (-15)
Surveys and Designs	$	50	50	50	100	+50
Safety of Dams	$	5,500	5,445	---	---	---
Total Requirements	$ (FTE)	29,575 (56)	29,281	2,086 (56)	2,310 (41)	+224 (-15)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Irrigation Systems	29,575	-294	29,281

This reduction will be accomplished through delays in hiring, reductions in travel and in the number of periodic inspections made.

Objective: To develop water supplies by constructing the delivery and distribution systems needed to irrigate practicably irrigable Indian lands. This program provides a means by which Indians can put much of their valuable water and land resources to beneficial use.

Program Summary: The estimate of $2,310,000 will provide $500,000 for the Flathead Irrigation Project; $1,710,000 for engineering and supervision; and $100,000 for surveys and designs to determine the need for rehabilitation work on existing irrigation projects.

The Bureau of Indian Affairs has 52 dams that would present a high or significant hazard to life or property in the event of failure; 23 of these are currently among the top 50 dams on the Department's technical priority list. The Bureau of Reclamation has been assisting BIA with its dam safety program, on a reimbursable basis, since 1978 when it began to provide an inspection service. Beginning in 1991, in order for the Department to better utilize the technical resources of the Bureau of Reclamation for the benefit of Native Americans, the 1991 budget proposes that the Bureau of Reclamation assume the Safety of Dams program of the Bureau of Indian Affairs. Reclamation's budget includes $9.1 million for this program, an increase of $3.7 million over the amount included in BIA's 1990 appropriation. Construction is scheduled to begin in 1991 on Black Rock and Dulce dams in New Mexico, which rank among the top of the Department's overall priority list.

Base Program:

Engineering and Supervision ($2,036,000; FTE 56): This item includes funds for salaries, travel, and administrative and project management expenses associated with the irrigation and power engineers and managers. Included are the conventional engineering-related activities, such as preparing engineering designs and specifications, construction management, and operation and maintenance functions. Most staff employees engaged in these activities are located in the Bureau of Indian Affairs field offices and are headquartered in Aberdeen, South Dakota; Albuquerque, New Mexico; Billings, Montana; Phoenix, Arizona; Portland, Oregon; Sacramento, California; and Window Rock, Arizona.

Surveys and Designs ($50,000): Surveys and designs are required to provide the planning necessary for extension and rehabilitation of existing irrigation projects. Engineering, soil surveys, geological investigations, and water availability determinations are essential in ascertaining physical feasibility of development. Costs and benefits are calculated for proposed developments, and projects are formulated to provide Indian economic development where water is the critical element. These surveys and designs are performed by or under the direction of existing staff at area and project offices. Where necessary, inhouse capability is supplemented by contract.

Change from FY 1991 Base:

(Dollar amounts in thousands)

Program Elements		FY 1991 Base	FY 1991 Estimate	+/- Difference
Project Construction	$	---	500	+500
Engineering and Supervision		2,036	1,710	-326
	(FTE)	(56)	(41)	(-15)
Surveys and Designs	$	50	100	+50
Total	$	2,086	2,310	+224
	(FTE)	(56)	(41)	(-15)

Project Construction (+$500,000): These funds will be used for the Flathead Indian Irrigation Project to provide continuous monitoring and recording instrumentation for the movement, quantities, and distribution of irrigation water in the various on-reservation streams and irrigation canals.

Engineering and Supervision (-$326,000; FTE -15): The decrease includes engineering and construction management costs associated with the transfer of the Safety of Dams Program to the Bureau of Reclamation.

Object Class Distribution - Engineering and Supervision

	FTE	Amount
Personnel Compensation	-15	$-349,000
Personnel Benefits		- 49,000
Travel		+ 20,000
Supplies and Materials		+ 10,000
Other Services		+ 42,000
Total	-15	$-326,000

Surveys and Designs (+$50,000): The increase in funds will be used to reduce the backlog of survey and design activity at the various irrigation projects administered by the Bureau of Indian Affairs. Priorities will be determined at the area office level, depending upon the critical need and/or condition of the facility.

Justification of Program and Performance

Account:	Construction
Activity:	Housing

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Housing Development	$	3,277	3,244	3,402	3,402	---
	(FTE)	(80)		(80)	(80)	(--)
Housing Improvement Program	$	19,063	18,873	---	16,699	+16,699
Housing Training	$	123	122	---	123	123
Total Requirements	$	22,463	22,239	3,402	20,224	+16,822
	(FTE)	(80)		(80)	(80)	(--)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Housing	22,463	-224	22,239

This reduction will be absorbed by the Housing Development Program, largely by the central office, with a pro-rata share by each area office, as necessary. It would be very difficult to spread the reduction across the Housing Improvement Program (HIP) because all available HIP funds have been distributed, many contracts have been written, and, in some cases, the small amounts would be difficult to administer. The reduction may create a hardship for some area/agency offices, as this program operates on a very thin margin. Any reduction must come from either travel or personal services, both of which are vital to program operation. The contract monitoring, inspection, and oversight responsibilities could not be met with a reduction of either staff or travel.

Objective: To provide decent, safe, and sanitary housing for Indians in Indian communities.

Base Program:

Housing Development ($3,402,000; FTE 80): The Housing Development component consists of bureau staff whose responsibilities are: (a) to implement, monitor, inspect and coordinate the Housing Improvement Program (HIP), especially with the Indian Health Service (IHS) sanitary facilities construction program; and (b) to a lesser extent, assist Indian tribes in working with other federal agencies--Housing and Urban Development (HUD) and the Farmer's Home Administration (FmHA)--involved in providing Indian housing.

The Housing Development staff is responsible for carrying out the HIP directions, which consist of two main elements: (1) distribution of HIP funds on the basis of the tribal inventory of housing needs and (2) implementation of a more cost-effective program. It has become clear, because of the very nature of construction projects, that these projects require close monitoring and inspection. The implementation of a more cost-effective program will be accomplished by aggressive monitoring and inspection and by performing the BIA housing administration and technical assistance functions. Where the program is under contract, monitoring and inspection is carried out in conjunction with tribal contractors. The housing staffing pattern that has been established to carry out these functions places heavier emphasis on personnel knowledgeable in standard construction practices, including engineering assessments, and includes a much greater emphasis on construction scheduling, cost accounting, architectural and engineering technical experience, and housing program development experience.

The proposed budget of $3,402,000 reflects the amount needed to meet the staff operations and administrative costs to carry out the bureau's housing effort effectively.

Change from FY 1991 Base:

(Dollar amounts in thousands)

Program Elements		FY 1991 Base	FY 1991 Estimate	+/- Difference
Housing Training	$	---	123	+123
Housing Improvement Program	$	---	16,699	+16,699
TOTAL	$	---	16,822	+16,822

Housing Training (+$123,000): The bureau will continue to offer the HIP management and HIP reporting system training to tribal HIP coordinators and bureau staff involved in the implementation of the Housing Improvement Program.

Housing Improvement Program (+$16,699,000): The Housing program requirements are based on the FY 1988 housing inventory. This inventory shows the following needs:

Service populations (families)	188,781
Less: Existing dwellings in standard condition	-98,523
Families in need of housing assistance: (total need)	90,258
Houses suitable for renovation to standard	(38,921)
New homes required	(51,337)

The primary responsibility for new home construction on Indian reservations lies with the Department of Housing and Urban Development (HUD). Although the bureau has done a limited amount of new unit construction in the past, this budget proposes to focus every available dollar on rehabilitating existing homes. In this way, many more families will receive needed assistance than if funds were used to build new homes for a small number of families.

The funding requested for FY 1991 will be allocated among reservations/tribes in accordance with the distribution system implemented in FY 1986. The primary goal is to reduce or eliminate substandard housing on a planned basis, recognizing both priorities and available resources. This planned effort will achieve a balance between a sustained housing improvement effort in areas with larger needs, while rotating funds to complete the effort in areas with smaller needs.

The Housing Improvement Program is the major component of the bureau's housing program. It provides for renovations, repairs, or additions to existing homes. Two types of repair categories are used: (a) repairs to houses that will remain substandard but need repairs for the health and/or safety of the occupants; and (b) repairs to bring housing to standard condition.

The bureau's renovation effort is a key element in reducing the total cost of achieving the goal of eliminating substandard Indian housing. The program benefits Indian families by providing decent, safe, and sanitary shelter, thus reducing the health and social costs created by an unsafe and unsanitary environment. In addition, it generates employment and business activities. Whenever possible, HIP funding is combined with funding from other programs in order to stretch the housing dollar and to provide the maximum housing possible. Under this arrangement, HIP generally provides the construction material while other programs, with the exception of the IHS program, furnish the necessary labor. In FY 1990, $11,360,200 will be contributed to the HIP in the form of labor and materials from other programs. Thus, several federal agencies/programs will combine their resources and efforts to achieve their mutual goal, which, in this case, is to provide standard-condition housing for the target population.

The proposed budget of $20,224,000 reflects a policy determination to hold new construction programs to a minimum and to focus on rehabilitation of existing housing in lieu of new construction.

The following chart shows the number of Indian housing units constructed and repaired from FY 1963 through FY 1989.

NEW HOMES CONSTRUCTED AND REPAIRS COMPLETED
FY 1963 through FY 1989

HUD ownership	40,323
HUD rental	26,542
Housing improvement, new homes	11,051
Flood rehabilitation	400
Built with judgment funds	794
Built with credit loans	2,798
Other	8,655
Total, New Homes	90,563
Housing improvement, repairs	69,562

FUNDS CONTRIBUTED TO HIP BY OTHER SOURCES
FY 1988 and FY 1989

Source	FY 1988	Actual FY 1989
Indian Health Service	$6,000,000	$9,000,000
Tribal appropriated funding	657,000	548,500
Individuals (includes materials and labor costs)	117,800	329,800
Department of Labor programs (JPTA, etc.)	358,000	358,000
Other (HUD, CDBG, FmHA, DOE, etc.)	927,000	1,123,900
Total, other programs	$8,059,800	$11,360,200

In FY 1989, the program was approximately 72% contracted, with the value of contracts amounting to $14,176,950 out of the HIP funds of $20,006,000.

Program Accomplishments: In Fiscal Year 1989, the bureau provided 180 new houses and 1,759 repairs. The recent years have shown a leveling off and even a modest decline in the need for emergency/maintenance type repairs. This positive development has enabled the program to concentrate on making repairs to bring houses to standard condition, improving the overall housing stock. Thus, providing additional money for repair work further increases the ability of the HIP to do more substantial renovation work than would otherwise be accomplished. While the total repair effort appears to be decreasing, the net result, however, is more standard housing. Estimates for FY 1990 and FY 1991 are shown below:

	Actual FY 1989	Estimate FY 1990	Estimate FY 1991
New	180	-0-	-0-
Repairs	1,759	1,682	1,672

The estimated FY 1991 BIA program accomplishments will meet approximately five percent of the overall long-term renovation needs. Increased emphasis will be directed toward making repairs to standard condition.

The cost factors derived for FY 1990 HIP operations and for the FY 1991 proposed level are as follows:

	Fiscal Year	Estimated Average Cost	No. of Units	Total Cost
Repairs to standard	1990	$10,000	1,345	$13,450,000
	1991	11,250	1,311	14,748,750
Non-standard repairs	1990	2,100	337	707,700
	1991	1,700	361	613,700

Workload Data: The last column below shows FY 1991 workload data based on the proposed funding level:

	Actual FY 1986	Actual FY 1987	Actual FY 1988	Actual FY 1989	Estimate FY 1990	Estimate FY 1991
New house starts (HIP)	347	181	181	180	-0-	-0-
Repairs	2,487	1,636	1,773	1,759	1,682	1,672

Justification of Program and Performance

Account: Construction
Activity: Employee Housing

(Dollar amounts in thousands)

Program Element		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Estimate	Inc. (+) Dec. (-) From Enacted
Employee Housing	$	500	495	1,000	+500
Total Requirements	$ (FTE)	500 (--)	495	1,000 (--)	+500 (--)

Impact of Public Law 99-177	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Employee Housing	500	-5	495

This reduction will be accomplished by reducing the contracted program. The effect will be the elimination of housing repair needs studies at one agency.

Objective: To conduct a pilot program to address repair needs for the BIA stock of housing, which constitutes 42 percent of the Department's total employee housing.

Justification: The Bureau of Indian Affairs manages approximately 4,000 units of employee housing, of which approximately 3,400 units require rehabilitation and of which approximately 200 units require replacement.

Actual maintenance requirements for general repairs, operational costs of units that are vacant, code and regulatory compliance, utility repair and replacements, street and general access repairs, and purchase and maintenance of necessary sanitation equipment have exceeded rent collections used to address these needs. Consequently, the condition of approximately one-third of the BIA units are classified as "poor" (i.e., needing major repairs or having substantial deferred maintenance requirements, such as leaking roofs or cracked foundation walls) or "obsolete" (i.e., units having major health and safety violations, which should be replaced or undergo major renovation before they can be used as residences). Poor housing commands lower rents, in turn meaning there is less funding available to repair and maintain these properties. For reasons of employee health and morale, as well as economics, this cycle must be broken.

This initiative provides the basis for development of a multi-year phased housing strategy to bring required employee housing up to acceptable condition. This strategy includes three steps: first, to determine what employee housing is required and to dispose of the excess; second, to complete the inventory of conditions and to begin the corrections needed to bring the required housing up to acceptable condition; and, third, to undertake a renovation/replacement program, based on the specifications developed in steps one and two.

The multi-year phased strategy will emphasize a reduction in any excess stock of housing that requires federal management and upkeep and the identification of those potential sites where a model of transferring ownership or management could be applied.

The $1,000,000 requested in FY 1991 would fund, under contract, onsite investigations, evaluations, and analyses of a selected number of government-furnished housing units provided to support the bureau's various programs. This effort will include the investigation of the physical condition of selected government housing facilities to determine repair and/or replacement costs, as well as to continue identification of those excess to bureau requirements and to initiate corrective action on those facilities identified in phase one.

Justification of Program and Performance

Account: Construction
Activity: Road Maintenance and Road Construction

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Estimate	Inc. (+) Dec. (-) From Enacted
Road Maintenance	$	22,625	22,400	26,409	+3,784
	(FTE)	(411)		(416)	(+5)
Road Sealing	$	7,973	7,894	10,898	+2,925
Road Construction	$	1,000	990	---	-1,000
	(FTE)	(45)		(45)	(--)
Equipment Pool Operations (Reimbursement)	(FTE)	(47)	---	(47)	(--)
Allocation from Federal Highway Administration	(FTE)	[573]	---	[573]	(--)
Total Requirements	$	31,598	31,284	37,307	+5,709
	(FTE)	(503)		(508)	(+5)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Road Maintenance and Road Construction	31,598	-314	31,284

This reduction will be accomplished through cost savings resulting from hiring delays, increased efficiency in the operations of the Road Maintenance Program and the Pushmataha road construction project, and the delay in sealing approximately four miles of paved roads.

Road Maintenance

Objective: To provide safe and accessible public roads to aid in the educational, social, and economic development of Indians. Funds are used for the following purposes:

- To repair and maintain 20,000 miles of public roads serving Indian reservations in order to promote safety and convenience for reservation residents, with particular emphasis on school bus routes and arterial highways.

- To protect the government investment by preventing or repairing damage by rain and wind on 18,000 miles of roads within the bureau system which were graded or surfaced under the Road Construction Program.

- To meet the requirements of the Surface Transportation Assistance Act of 1982, to properly maintain roads constructed with Highway Trust Funds, and to avoid loss of availability of these funds for Indian roads construction.

Further objectives of the program are as follows:

- To plan, schedule, and provide maintenance repairs and services in accordance with the standards of the American Association of State Highway and Transportation Officials (AASHTO).

- To perform maintenance repairs and service in such a manner as to protect the environment of the reservation, adjacent lands, and individual Indian lands, and to prevent premature failure of asphalt pavements.

- To provide equipment necessary for efficient force account road construction projects and for road maintenance operations.

In FY 1991, requests for road maintenance will be developed by tribal governments, in consultation with bureau administrators and engineers. The tribes provide information on road maintenance and road sealing needs on the reservations. The agency and area offices provide the tribes with guidelines which are designed to promote nationwide comparability and to assure that Highway Trust Fund (HTF) constructed roads are properly maintained. Special needs related to a particular reservation may also be presented, with supporting justification. This process requires decisions on funding distribution for road maintenance and road sealing to be made at the national level, with appropriate consultation with tribal representatives.

Through the bureau's Productivity Improvement Plan, 200 paved miles per year are expected to be added to the BIA system in FY 1991 and beyond. Through program efficiency and implementation of the Road Maintenance Productivity Improvement Plan, the bureau expects to increase the proportion of funds spent for maintenance of paved roads. The increase in efficiency is expected to be accomplished through greater tribal participation in implementation of the program; P.L. 93-638 contracts; Buy Indian contracts; better program guidelines from the central office; and improved management and training by the areas and agencies.

Road Sealing ($10,898,000; FTE 0): Under the Road Sealing program, the need for sealing of pavements built with Highway Trust Funds (HTF) is a first priority because of the direction of 23 U.S.C. 116. Lack of proper road sealing could result in the loss of the bureau's road construction funding from HTF. In FY 1991, $6,400,000 is provided for sealing of HTF pavements. The remainder is provided for sealing of pavements built with Interior appropriations prior to 1984. It is estimated that a proper road sealing program costs one-fifth as much as it costs when sealing is neglected and must be covered by reconstruction.

Requirements for road sealing and pavement maintenance will increase steadily for the next decade. On an average, sealing of asphaltic pavements is required on an eight-year cycle. Of the bureau's 20,826-mile system, in FY 1989, approximately 4,700 miles are paved. With the added progression of 200 miles annually, approximately 7,100 miles will be paved by FY 2000. With this projection and with pavements requiring sealing every eight years, approximately 900 miles annually will require sealing, at a cost of $22,000 per mile, yielding an expected annual need of approximately $20,000,000. The funds requested in FY 1991 will seal approximately 500 miles of pavement.

The current assessment for sealing of roads built with Interior appropriations is estimated at approximately $18 million. The increase of $2,925,000, from the amount appropriated in FY 1990, will be used to seal approximately 132 miles of Interior roads at a cost of approximately $22,000 per mile. Funds are provided in the base program to fulfill the requirements for sealing roads constructed with HTF funds.

Road Maintenance ($26,409,000; FTE 416): Based upon tribal estimates of need, the road maintenance program consists of the following activities:

Central Office: The $162,000 provides for the salary and office expenses of engineers, travel expenses, consultation with tribal governments, and development of training aids. The engineers provide monitoring and assistance to area maintenance engineers in performing their duties and provide advice and training, through those area maintenance engineers, to the agencies and tribes which perform the actual maintenance operations.

Field Operations: This program ensures the repair, maintenance, and improvement of the road system serving Indian people through the following activities.

Equipment Purchase: Estimates of needs received from the agencies total approximately $5 million.

The bureau is conducting a review of equipment usage rates, and some of the requests may be filled by transfer of equipment from areas and agencies where little use is being made of the equipment. Other requests will be satisfied by acquisition of surplus equipment from other federal agencies. For these reasons, the portion available for equipment purchase has been limited to $1,000,000, pending further study. The $1,000,000 will be used for essential pavement maintenance equipment and replacement of units with very high repair costs.

Ferry Operation and Maintenance: BIA operates a ferry across Lake Roosevelt, which is on the Columbia River in Washington State, at the eastern boundary of the Colville Indian Reservation. Annual cost for operation and maintenance is $375,000.

Airstrip Maintenance: Airstrip maintenance has been an incidental expense in the Road Maintenance Program for many years. For the first time, in FY 1990, the bureau made a separate estimate based on the tribal evaluation of need for this portion of the program. The tribal evaluation is $234,000 in FY 1991.

Bridge Maintenance: For bridge maintenance, $1,518,000 is provided, based on the bureau's Bridge Sufficiency Report. BIA bridges are inspected on a two-year cycle, with approximately half of the bridges being inspected each year. The inspection report provides a recommendation of expenditure for replacement, rehabilitation, or maintenance. Adequate maintenance assures minimal expenditures for the higher cost activities of rehabilitation and replacement, which are financed from the Indian Reservation Road Construction Program in the Highway Trust Fund. Bridge maintenance is estimated separately to provide better information on the Road Construction Program.

Tribes and agencies are provided copies of the bridge inspection reports, and they may recommend revisions. BIA is responsible for 690 bridges on Indian reservation roads.

Emergency Maintenance: The tribe and agency analysis of the average annual cost of snow removal, ice control, washout repair, and landslide removal in the last five years is $3,498,000. Of this amount, $2,436,000 was used for snow removal and ice control, and $1,062,000 was for washout repair and landslide removal. Emergency maintenance is accomplished when necessary and does not depend on priority.

Routine Maintenance: Routine maintenance is conducted on paved, gravel, earth, and unimproved roads. It includes such items as smoothing surfaces, cleaning ditches, repairing potholes and pavements, and assuring proper roadway drainage. The requirement for road maintenance will increase steadily for the next decade. It is expected that an increase in efficiency of operations will offset some of the needs for the added services to the tribes and agencies, as the road mileage and road improvements increase.

SUMMARY

(Dollar amounts in thousands)

Activities, Subactivities, Program Elements, Sub-elements	FY 1990 Enacted To Date	FY 1991 Request	+/- Difference
Road Maintenance:			
Central Office	162	162	---
Road Sealing	7,973	10,898	+2,925
Equipment Purchase	200	1,000	+800
Ferry Operation and Maintenance	375	375	---
Airstrip Maintenance	153	234	+81
Bridge Maintenance	1,518	1,518	---
Emergency Maintenance	3,028	3,498	+470
Routine Maintenance	17,189	19,622	+2,433
Totals......................	30,598	37,307	+6,709

The increase for Road Maintenance of $3,784,000, from the amount appropriated in FY 1990, will be used primarily for routine maintenance. Efficiency of operations will increase due to the added service and consultation with the tribes and agencies. The increase will provide additional funds for crack sealing and pothole filling, which are required for a proper sealing program, and for better gravel road maintenance. Smaller increases will be made, at tribal request, for emergency maintenance, air strip maintenance, and equipment purchases.

The increase of five FTE will be distributed on the basis of need. One position will be supervisory and four will be entry level road maintenance positions.

Road Construction

Objective: To provide roads on Indian reservations for safe and convenient transportation of people and goods.

Program Justification: Project funds totaling $80,000,000 are included in contract authority from the Highway Trust Fund (HTF) of the Federal Lands Highway Program, Department of Transportation, and are not included in the bureau's budget. The bureau will finance all costs of this Indian Road Construction Program through the HTF contract authority. It includes funds for central office program management and for program supervision by the area/agency offices, not to exceed 6% of the total contract authority allocation.

In FY 1991, approximately $7.2 million from the Federal Highway Trust Fund for road construction on the Navajo Reservation will be used for constructing roads on the "new lands" located in Northern Arizona. All road construction on Indian reservations should be funded from the Highway Trust Fund. The bureau will work with the Office of Navajo and Hopi Relocation to identify the road construction needs on the "new lands."

In addition to awarding road construction contracts to private contractors, the bureau operates a road construction equipment pool to undertake projects in isolated or high-cost areas, where a "force account" operation is more economical than private contracting. The equipment pool is financed by a revolving fund which collects equipment rentals charged to projects funded from the Highway Trust Fund and from other bureau programs. Federal cost principles currently permit the bureau to establish equipment rental rates based on actual direct and indirect operating costs and include an allowance for depreciation. Charging rentals at rates based on these cost principles generates sufficient revenues to permit repair and replacement of existing equipment. Current rentals are estimated to be $11,000,000 annually. Since equipment pools operate on reimbursement authority, no appropriation is required.

Forty-seven (47) FTE are financed from this account for the field equipment pool operations. All other program FTE (573) are expected to be available from the Federal Highway Administration (FHWA) allocation account to carry out work under the funding provided by FHWA. The Surface Transportation Assistance Act (23 U.S.C. 204(b)) provides: "No ceiling on Federal employment shall be applicable to construction or improvement of Indian reservation roads."

Justification of Program and Performance

Account:	Construction
Activity:	Construction Contract Support

(Dollar amounts in thousands)

Program Element		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Estimate	Inc. (+) Dec. (-) from Enacted
Construction Contract Support	$	9,815	9,717	7,000	-2,815
Total Requirements	$	9,815	9,717	7,000	-2,815
	(FTE)	(--)		(--)	(--)

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Construction Contract Support	9,815	-98	9,717

The bureau will continue to fund its contractors' construction support needs at the 100 percent level, up to the limits of the adjusted appropriation. Since FY 1990 is the first year of funding Construction Contract Support, there is no historical data against which comparative analyses, judgments, and needs forecasts can be made.

Objective: To pay tribes and tribal organizations for overhead/administrative costs incurred as a result of their contracting for construction projects under Public Law 93-638, as amended.

Justification: The Indian Self-Determination and Education Assistance Amendments of 1988 (Public Law 100-472) provide that indirect costs will be paid to contractors for construction projects carried out under Public Law 93-638 contracts. As required by law, contract support will be paid only on the amounts associated with the administration of the contracts. Funds passed through to construction contractors or subcontractors, e.g., capital expenditures, subcontracts/subgrants, will be excluded from the contract base amount when calculating contract support needs. Contractors are only paid contract support on costs which generate indirect/administrative costs.

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
CONSTRUCTION

Program and Financing (in thousands of dollars)

Identification Code: 14-2301-0-1-452	1989 Actual	1990 Estimate	1991 Estimate
Program by activities:			
Direct Program:			
1. Buildings and utilities..........	37,312	42,000	40,000
2. Irrigation systems...............	18,031	20,000	24,000
3. Housing..........................	23,426	25,000	21,000
4. Land acquisition.................	82	4,239	---
5. Fish hatcheries rehabilitation...	1,891	1,652	---
6. Employee housing.................	---	495	1,000
7. Road maintenance and road construction...................	892	31,000	31,000
8. Construction contract support....	---	9,717	7,000
Total direct program.............	81,634	134,103	124,000
Reimbursable Program:			
1. Buildings and utilities..........	4	500	500
2. Irrigation systems...............	1,859	2,500	2,500
3. Housing..........................	649	---	
4. Road construction................	11,154	7,300	7,300
Total reimbursable program.......	13,666	10,300	10,300
10.00 Total obligations.............	95,300	144,403	134,300
Financing:			
11.00 Offsetting collections from: Federal funds...............	-12,666	-10,300	-10,300
14.00 Non-Federal funds...........	-1,000	---	---
21.40 Unobligated balance available, start of year...............	-68,734	-43,463	-69,603
22.40 Unobligated balance transferred, net.........................	9,093	---	---
24.40 Unobligated balance available, end of year................	43,463	69,603	48,702
39.00 Budget Authority..............	65,456	160,243	103,099
Budget Authority:			
40.00 Appropriation.................	79,283	138,226	103,099
40.00 Reduction pursuant to P.L. 99-177	---	-1,376	---
41.00 Transferred to other accounts.	-43,750	---	---
42.00 Transferred from other accounts	29,923	23,393	---
43.00 Appropriation (adjusted)......	65,456	160,243	103,099
Relation of obligations to outlays:			
71.00 Obligations incurred, net.....	81,634	134,103	124,000
72.40 Obligated balance, start of year	77,245	80,599	120,781
74.40 Obligated balance, end of year	-80,599	-120,781	-140,713
90.00 Outlays.......................	78,280	93,921	104,068

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
CONSTRUCTION
Object Classification (in thousands of dollars)

Identification Code: 14-2301-0-1-452	1989 Actual	1990 Estimate	1991 Estimate
Direct obligations:			
Personnel compensation:			
11.1 Full-time permanent	3,894	15,900	16,300
11.3 Other than full-time permanent	424	1,900	2,000
11.5 Other personnel compensation	37	700	700
11.8 Special personal serv. payments	9	20	20
11.9 Total personnel compensation	4,364	18,520	19,020
Personnel benefits:			
12.1 Civilian	975	3,320	3,400
13.0 Benefits for former personnel	4	5	5
21.0 Travel & transportation of persons	550	1,200	1,200
22.0 Transportation of things	164	750	750
23.2 Communications, utilities, and other rent	644	2,700	2,700
24.0 Printing and reproduction	5	10	10
25.0 Other services	43,729	54,397	57,915
26.0 Supplies and materials	1,938	15,000	15,000
31.0 Equipment	1,165	3,000	3,000
32.0 Lands and structures	13,951	15,000	15,000
41.0 Grants, subsidies & contributions	5,375	6,000	6,000
43.0 Interest and dividends	9	---	---
44.0 Refunds	25	---	---
99.0 Subtotal, direct obligations	72,898	119,902	124,000
Reimbursable obligations:			
25.0 Other services	13,666	10,300	10,300
ALLOCATION TO BUREAU OF RECLAMATION			
Direct obligations:			
Personnel compensation:			
11.1 Full-time permanent	1,087	112	---
11.3 Other than full-time permanent	18	18	---
11.5 Other personnel compensation	22*	---	---
11.8 Special personal serv. payments	1	---	---
11.9 Total personnel compensation	1,127*	130	---
Personnel benefits:			
12.1 Civilian	159	19	---
13.0 Benefits for former personnel	2	4	---
21.0 Travel & transportation of persons	61	57	---
22.0 Transportation of things	6	10	---
23.1 Standard level user charges	23	20	---
23.2 Other rent	1	1	---
23.3 Communications and utilities	10	11	---
24.0 Printing and reproduction	30	5	---
25.0 Other services	1,018	1,150	---
26.0 Supplies and materials	9	10	---
31.0 Equipment	11	130	---
32.0 Lands and structures	6,279	12,654	---
99.0 Subtotal, direct obligations	8,736	14,201	---
99.99 Total obligations	95,300	144,403	134,300

*Does not add due to rounding in the AAD File Listing.

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
CONSTRUCTION

Personnel Summary (in thousands of dollars)

Identification Code: 14-2301-0-1-452	1989 Actual	1990 Estimate	1991 Estimate
BUREAU OF INDIAN AFFAIRS			
Direct:			
Total number of full-time permanent positions..........................	140	419	419
Total compensable workyears:			
Full-time equivalent employment.....	249	654	649
Full-time equivalent of overtime and holiday hours.................	9	17	17
ALLOCATION TO BUREAU OF RECLAMATION			
Total number of full-time permanent positions..........................	32	4	0
Total compensable workyears:			
Full-time equivalent employment.....	31	5	0

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
14-2303-0-1-452

MISCELLANEOUS PAYMENTS TO INDIANS

For miscellaneous payments to Indian tribes and individuals pursuant to Public Laws 98-500, 99-264[, 99-503], 100-383, 100-512 [, 100-675, 100-580, 101-41], and 100-585, including funds for necessary administrative expenses, [$191,864,000], $52,407,000, to remain available until expended [,of which not to exceed $12,700,000 is made available to the Tohono O'Odham Nation for purposes authorized in the Gila Bend Indian Reservation Lands Replacement Act, Public Law 99-503]: Provided, That notwithstanding any other provision of law, funds appropriated pursuant to Public Law 100-383 shall not be subject to the provisions of 43 U.S.C. 1606(i).

Department of the Interior and Related Agencies Appropriations Act, 1990, Public Law 101-121.

Justification of Proposed Language Changes

Deletion: ",99-503",; 100-675, 100-580, 101-41"; and ",of which not to exceed $12,700,000 is made available to the Tohono O'Odham Nation for purposes authorized in the Gila Bend Reservation Lands Replacement Act, Public Law 99-503"

The deleted language is no longer necessary since funds for the San Luis Rey Indian Water Rights Settlement, the Puyallup Indian Settlement and the Payment to Tohono O'Odham Nation were provided in FY 1990 fulfilling the United States obligations incurred by the enactment of these Acts. Funds provided in FY 1990, for the Hoopa-Yurok Settlement fulfilled the requirements for a settlement fund authorized by legislation.

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
14-2303-0-1-452

MISCELLANEOUS PAYMENTS TO INDIANS

Program and Performance

1. White Earth Reservation Claims Settlement Act (P.L. 99-264): Funds in the amount of $511,000 will be used to investigate and verify questionable transfers of land by which individual Indian allottees, or their heirs, were divested of ownership and to achieve the payment of compensation to said allottees, or heirs.

2. Old Age Assistance Claims Settlement Act (P.L. 98-500): Funds will be used to identify, notify and compensate individuals entitled to compensation under this Act for unauthorized disbursement of $50 or more made by the Department of the Interior to repay states and counties for old age assistance benefits received by Indian descendents during their lifetimes. Within the amounts provided $197,000 is for program administration and $544,000 is for payment of claims.

3. Gila Bend Indian Reservation Lands Replacement Act (P.L. 99-503): Section 4 of this Act required that the Secretary of the Interior pay to the Tohono O'Odham Nation $10,000,000 in fiscal years 1988, 1989 and 1990, along with interest accrued from the date of enactment. The Act conditioned payment upon the Nation assigning to the United States all right, title and interest of the Nation in 9,880 acres of land within the Gila Bend Indian Reservation, and such assignment was made on October 13, 1987. The final payment required by the Act was made in FY 1990.

4. Payments for Aleutian and Pribilof Island Restitution (P.L. 100-383): P.L. 100-383, enacted August 10, 1988, is aimed at compensating Alaska Natives for their internment in camps during World War II. The Aleut civilian residents of the Pribilof Islands and the Aleutian Islands west of Unimak Island were relocated to temporary camps in isolated regions of southeast Alaska where they remained, under United States control, until mid 1945.

The United States failed to provide adequate care for the Aleuts, which resulted in widespread illness, disease, and death among the residents of the camps. Further, the United States failed to protect Aleut personal and community property while such was in U.S. possession or control.

The Act authorizes the Department of the Interior to enter into an agreement with the Aleutian/Pribilof Island Association to identify, locate, and compensate Aleut residents for the loss of personal, real, and community property damaged or destroyed during World War II. Funds authorized in the amount of $27,750,000 will be used to cover the administrative and legal expenses of carrying out the agreement; to complete payment of trust funds to the communities; individual payments to eligible Aleuts; compensation for damaged or destroyed church property; and payment to the Aleut Corporation pursuant to Section 205 of the Act. Partial fulfillment of this Act was accomplished in FY 1989 and FY 1990. In FY 1989, $150,000 was provided for administrative and legal expenses. In FY 1990, $300,000 was provided for administrative and legal expenses, $5,000,000 for payments to eligible Aleuts and $10,000,000 to the Aleut Corporation as partial compensation for the Aleuts' loss of Attu Island.

5. Water Rights Settlements (P.L. 100-512, 100-675, and 100-585): Salt River Pima-Maricopa Indian Water Rights Settlement Act, P. L. 100-512, authorizes funds in the amount of $47,470,000 for the settlement of water rights claims of the Salt River Pima-Maricopa Indian Community in Arizona. Funds are deposited in a trust fund established by Section 9 of the Act to use in rehabilitating and improving the Community's existing water facilities. Funds in the amount of $23,735,000 were provided in FY 1990 as partial fulfillment of this Act.

San Luis Rey Indian Water Rights Settlement Act, P. L. 100-675, provides for the settlement of water rights claims of five bands of California Mission Indians. Funds are deposited in a tribal development fund established by section 105 of the Act for the benefit of the Bands. Funds in the amount of $32,445,751 provided in FY 1990 fulfill the United States obligation incurred by enactment of this Act.

Colorado Ute Indian Water Rights Settlement Act, P. L. 100-585, provides for the settlement of water rights claims of the Ute Mountain Ute and the Southern Ute tribes in Colorado. Funds are deposited in two tribal development funds established by section 7 of the Act for the benefit of the tribes. Each Tribe is required to submit an economic development plan to the Secretary of the Interior prior to using the funds. The Act authorizes a total amount of $49,500,000 to be provided in three annual installment payments to the Tribal Development Fund. The first installment of $19,500,000 was made in FY 1990.

6. Puyallup Indian Settlement Act of 1989 (P.L. 101-41): Funds provided are for the settlement of land claims of the Puyallup Tribe in Tacoma, Washington. The Act includes authorizations for: $500,000 for the purchase of land; $22,350,000 for payment to individual members of the Puyallup Tribe; $18,300,000 for a permanent trust fund for Tribal members; $100,000 for the fisheries aspect of the settlement; $10,000,000 for Economic Development and Land Acquisition; and $25,500,000 for the Blair Project.

The $77,250,000 provided in FY 1990 will fulfill the United States obligation incurred by the enactment of this Act.

7. Hoopa-Yurok Settlement: Section 4(e) of the Hoopa-Yurok Settlement Act (P.L. 100-580) authorizes the appropriation of $10,000,000 to be deposited in the Hoopa-Yurok Settlement Fund and made available for lump sum payments to individuals on the Hoopa-Yurok Settlement Roll to be developed in accordance with Section 5 of the Act. The $10,000,000 was provided in FY 1990 to fulfill the requirements of this section of the Act.

Changes from FY 1991 Base:

(Dollar amounts in thousands)

		FY 1991 Base	FY 1991 Estimate	Difference (+ or -)
Old Age Assistance Payments	$	544	584	+40
Aleutian and Pribilof Island Restitution	$	0	12,300	+12,300
Water Rights Settlements	$	0	38,800	+38,800
	Total	544	51,684	51,140

Old Age Assistance Payments (+$40,000): The increase will be used to supplement the amount of funds currently available for payment under the terms of the Old Age Assistance Claims Settlement Act, and thus reduce the amount of future funding needed to fully implement the Act.

Aleutian and Pribilof Island Restitution (+12,300,000): It is imperative that the $12,300,000 as authorized by P.L. 100-383 be appropriated in order to pay per capita payments of $12,000 to any remaining Aleuts that were not compensated in FY 1990 and to provide the remainder of the in lieu compensation for the loss of Attu Island to the Aleut Corporation. In addition, these funds will provide compensation for damaged or destroyed church properties, and compensation for community losses by establishing eight trust accounts for the benefit of the residents of Attu, their descendents and the affected Aleut villages. It will also provide funds for administrative and legal expenses associated with carrying out the agreement with the Aleutian/Pribilof Island Association.

The appropriation of $12,300,000 will fulfill the United States obligation incurred by the enactment of this Act.

Water Rights Settlements (+38,800,000): An appropriation in the amount of $38,800,000 is essential to meet the payment schedule established by Congress for the two Indian water rights settlements enacted in the 100th Congress.

Of the total request, $15 million will be provided to the Colorado Ute Tribes to satisfy the second year of a three-year United States obligation incurred by the enactment of the Colorado Ute Indian Water Rights Settlement Act, P.L. 100-585. A failure to appropriate funds to meet this scheduled obligation would result in the United incurring interest charges at a rate of 8 and 1/8 percent against the unpaid balance.

The provision of $23.8 million to the Salt River Pima-Maricopa Indian Community will meet the total remaining United States obligation incurred by the enactment of the Salt River Pima-Maricopa Water Rights Settlement Act, P.L. 100-512.

BUREAU OF INDIAN AFFAIRS
Summary of Requirements
(Dollar Amounts in Thousands)

Appropriation: Miscellaneous Payments to Indians	FTE	Amount	FTE	Amount
Appropriation currently available, 1990............			19	$191,864
Reduction pursuant to P.L. 99-177.................			0	0
Adjusted FY 1990 Appropriation....................			19	191,864
Adjustment to base:				
Adjustment for one additional paid day in FY 1991..			0	0
Adjustment for Improved Administrative Efficiency...................................		-7		
Adjustment for Staffing Efficiency................		-4		
Adjustment for the increased cost of Federal Employees Retirement System.....................		14		
Additional Cost in 1991 for the 1991 Pay Raise.....		9		
Total adjustment to base..........................			0	12
1991 Base Budget..................................			19	1,267
Program Changes...................................			0	51,140
Total Requirements (1991 Estimate)................			19	52,407

Justification of Adjustments to Base

	$000	FTE
Adjustment for Administrative Efficiency	-7	

The Department is proposing to decrease spending for consultants, travel, overtime, supplies, and equipment by about 5 percent to improve administrative efficiency and place greater priority on 1990 program initiatives. Specific reductions are proposed in the following areas:

Travel	-$ 2
Overtime	- 2
Supplies	- 3
Total	-$ 7

	$000	FTE
Adjustment for Staffing Efficiency	-4	

Savings are proposed from a planned reduction in the average grade achieved by filling vacant positions at an average of one grade lower than previously filled and from taking into account an expected additional lapse of 30 days before filling positions that become vacant in 1991. Specific reductions follow:

Average Grade	-$ 2
Lapse	- 2
	- 4

	$000	FTE
FERS Retirement Costs		
The adjustment is for the increase in estimated retirement costs resulting from the continuing growth in the relative proportion of FERS employees in the bureau work force.	+14	
Additional Cost in 1991 of the 1991 Pay Raise		
The adjustment is for the additional amount needed in 1991 to cover 40 percent of the additional three quarter's cost of the estimated 3.5 percent pay raise effective in January 1991. The 1991 cost of the remaining 60 percent will be absorbed in FY 1991.	+9	

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
MISCELLANEOUS PAYMENTS TO INDIANS

Program and Financing (in thousands of dollars)

Identification code: 14-2303-01-452	1989 Actual	1990 Estimate	1991 Estimate
Program by activities:			
1. White Earth Act Administration......	545	513	513
2. Old Age Assistance..................	942	742	782
3. Gila Bend Lands Replacement.........	11,300	12,700	--
4. Aleutian/Pribilof Restitution.......	150	15,300	12,300
5. Water Rights Settlements............		75,359	38,800
6. Hoopa-Yurok Settlement..............		10,000	--
7. Puyullup Settlement		72,250	5,000
10.0001 Total obligations	12,937	186,864	57,395
Financing:			
21.4001 Unobligated balance available, start of year:.....................	(2,157)	(3,172)	(8,172)
24.4001 Unobligated balance available, end of year:.......................	3,172	8,172	3,184
60.0001 Budget authority appropriation,	13,952	191,864	52,407
Relation of obligations to outlays:			
71.0001 Obligations incurred, net......	12,937	186,864	57,395
72.4001 Obligated balance, start of year.................	79	208	196
74.40001 Obligated balance, end of year..................	(208)	(196)	(198)
90.0001 Outlays........................	12,808	186,876	57,393

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DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
MISCELLANEOUS PAYMENTS TO INDIANS

Object Classification (in thousands of dollars)

Identification code: 14-2303-01-452	1989 Actual	1990 Estimate	1991 Estimate
Personnel Compensation			
11.1 Full-time permanent...............	49	54	60
11.3 Other than full-time positions....	333	340	346
11.5 Other personnel compensation......	2	5	6
11.8 Special personnel compensation....	11	13	12
11.9 Total personnel compensation......	395	412	424
12.1 Civilian personnel benefits.......	51	61	71
21.0 Travel & transportation of persons	29	35	38
22.0 Transportation of things..........	6	14	17
23.2 Rental Payments to others.........	18	24	28
24.0 Printing and reproduction.........	(1)	5	5
25.0 Other Services....................	322	375	400
26.0 Supplies and materials............	17	24	27
31.0 Equipment.........................	(3)	5	10
41.0 Grants, subsidies, and contributions..................	12,103	185,909	56,375
43.0 Interest and dividends............	1		
99.0 Total obligations.................	12,937	186,864	57,395

Personnel Summary

Total number of permanent positions.....	12	12	12
Total compensable work years:			
Full-time equivalent employment......	19	19	19
holiday hours.....................	0	0	0

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
REVOLVING FUND FOR LOANS

(Dollar amounts in thousands)	FY 1990 Enacted To Date	FY 1991 Estimate	Inc. (+) Dec. (-) From 1990
Revolving Fund for Loans $	-0-	-0-	-0-

Impact of P.L. 99-177: The amount of loans made in FY 1990 will be reduced by $182,000.

Objective: The Indian Financing Act of 1974 (P.L. 93-262) combined three separate accounts into one fund and authorized appropriations of $50 million for the fund, bringing to $76.5 million the total authorization of the fund.

From 1975 to 1989, $155.9 million has been loaned from the fund. A breakdown by area and purpose is included in Table I. The FY 1990 program will provide $12.8 million in direct loans to Indian tribes and organizations, individual Indians, and Alaskan Natives for economic development purposes, and loans to tribes for relending to tribal members through their credit programs. In addition, the program will include funding for expert assistance to tribes in the preparation and litigation of claims pending before the Court of Claims.

Over the history of the program, $239.5 million has been loaned with $26.2 million of the principal being written off, or 11.0 percent of total loans. A $5 million loan was transferred from another fund. Interest in the amount of $69.6 million has been earned in this program. As of September 30, 1989, outstanding loans totaled $106.5 million. Delinquent payments total $0.3 million, and delinquent loans in excess of 180 days total $24.6 million, or 23.4% of loans outstanding.

In FY 1991, the bureau will make an estimated $9.0 million in loans, which will be funded by the carry-over balance and collections during the year.

SUMMARY OF ACTIVITY - REVOLVING FUND FOR LOANS
BUREAU OF INDIAN AFFAIRS
Through September 30, 1989

		Collections		Loans	
	Loaned	Principal	Interest	Cancelled	Outstanding
Through 09/30/88	$227,901,517	$103,167,035	$63,502,252	$24,436,960	$100,297,522
Through 09/30/89	11,883,662	3,858,693	6,143,916	1,826,674	
Through 09/30/89 Cumulative	$239,785,179	$107,025,728	$69,646,168	$26,263,634	$106,495,817

Comparison of Fund Balances
FY 1988 and FY 1989

	General Fund	Expert Assistance	Total
Through 09/30/88	8,299,029	974,331	9,273,360
Through 09/30/89	4,695,779	1,023,815	5,719,594

TABLE I

REVOLVING FUND FOR LOANS
Funds Allotted to Areas by Purpose
Selected data for FY 1975-1989
(in thousands of dollars)

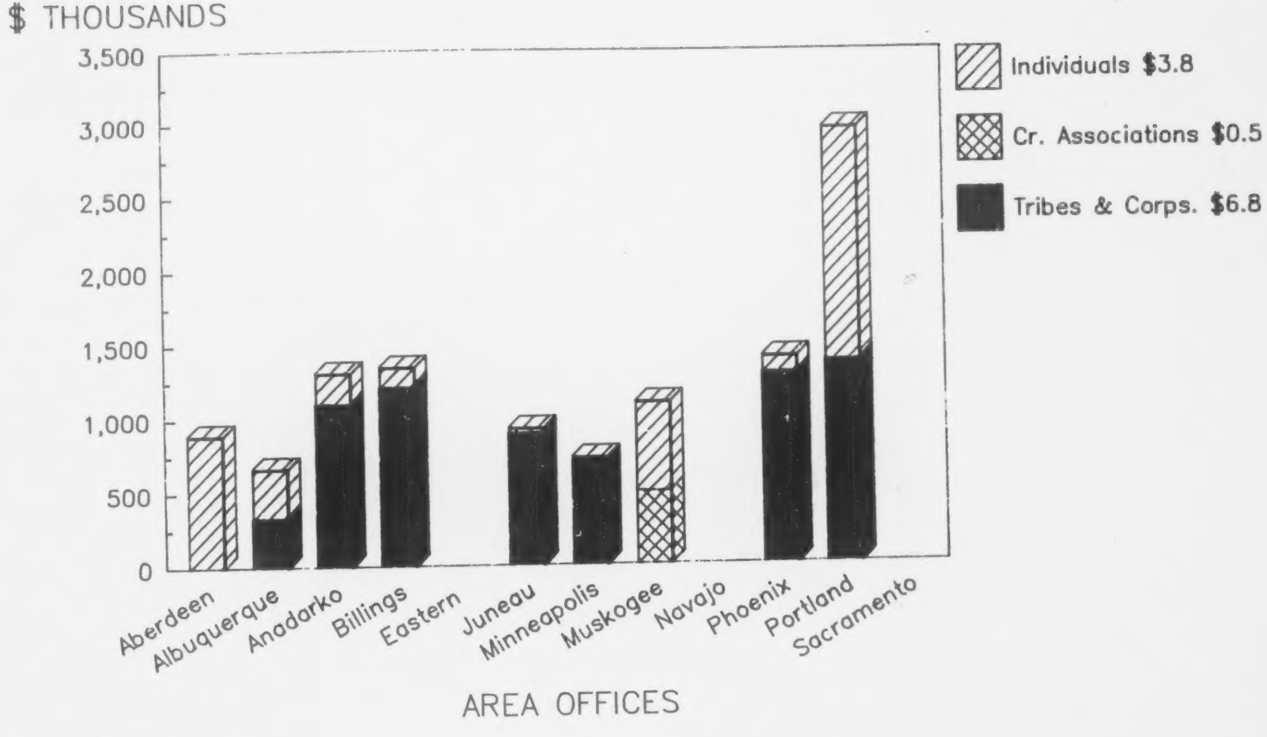
AREA	RELENDING	TRIBAL ENTERPRISES New	TRIBAL ENTERPRISES Existing	LAND	COOPERATIVES & INDUSTRIAL	CREDIT ASSOCIATIONS	DIRECT TO INDIVIDUALS	TOTAL
Aberdeen	$ 6,192.0	$ 6,088.5	$10,798.8	$ 1,445.0	120.0		$6,967.5	$ 31,611.8
Albuquerque	900.0	3,924.8	4,421.0	1,844.0			4,205.8	15,295.6
Anadarko		2,658.4	467.6	840.7			911.6	4,878.3
Billings	4,715.0	4,141.4	2,752.0	3,268.0		70.0	2,051.1	16,997.5
Eastern	810.0	975.0	1,079.4				977.1	3,841.5
Juneau	2,215.0	7,321.0	2,589.9		$1,688.7	$300.0	23.0	14,137.6
Minneapolis	1,000.0	3,818.3	3,243.0	1,440.0			1,049.0	10,550.3
Muskogee		1,655.0	429.9			4,050.8	2,740.8	8,876.5
Navajo		2,700.0	946.4					3,646.4
Phoenix	1,700.0	5,268.0	6,295.0	190.0	600.0	500.0	775.4	15,328.4
Portland	1,675.0	8,912.0	6,042.0	5,662.7	13.6		6,507.0	28,812.3
Sacramento		227.0					1,724.0	1,951.0
TOTALS	$19,207.0	$47,689.4*	$39,065.0	$14,690.4	$2,422.3	$4,920.8	$27,932.3	$155,927.2

*104 new tribal enterprises were started at an average cost of $458,552.

REVOLVING FUND FOR LOANS

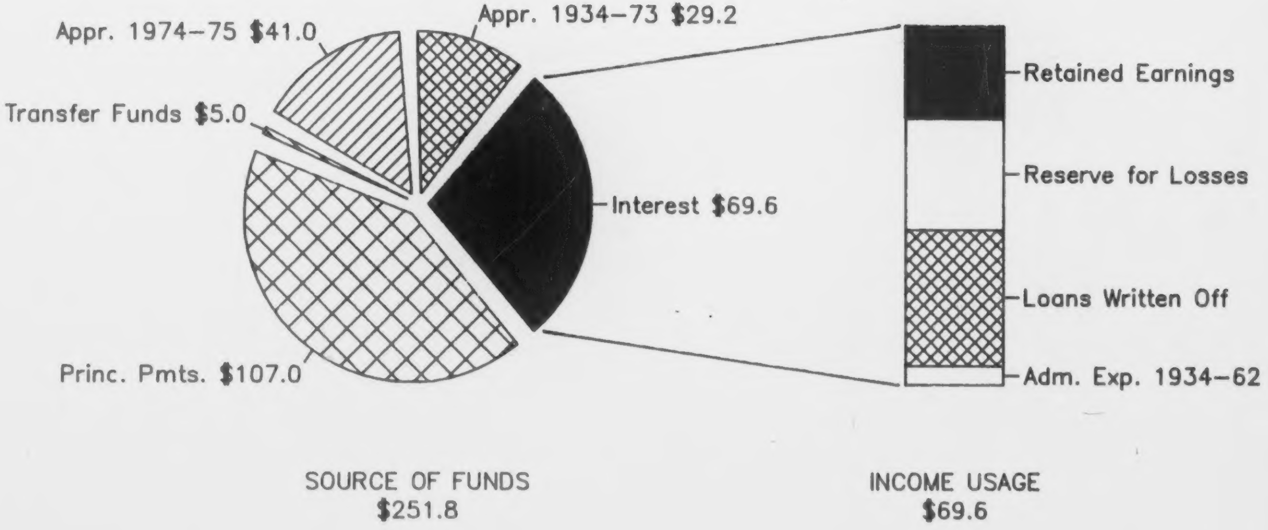
FY 1989

$11.6 MILLION



DIRECT LOANS $11.1
EXPERT ASSISTANCE $0.5

REVOLVING FUND FOR LOANS
FUNDING SOURCES
FOR $239.5 MILLION IN LOANS



1934–73 Appropriations include Expert Assistance
1974–75 Appropriations Indian Financing Act

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
REVOLVING FUND FOR LOANS

During Fiscal Year [1990] 1991, and within the resources and authority available, gross obligations for the principal amount of direct loans pursuant to the Indian Financing Act of 1974, as amended (88 Stat. 77; 25 U.S.C. 1451 et seq.), shall not exceed [resources and authority available] $9,000,000.

(Department of the Interior and Related Agencies Appropriations Act, 1990, Public Law 101-121.)

This language is an administrative limitation required by OMB Circular A-11, 31.5.

Authorization: The bureau's revolving loan fund was authorized by the Indian Reorganization Act of 1934 (25 U.S.C. 4070). It has been amended and expanded several times, adding new programs and authorizing additional funds.

25 U.S.C. 470: Authorized $20,000,000 to be established as a revolving fund to make loans to Indian chartered corporations for the purpose of promoting the economic development of such tribes and their members. Repayments of amounts loaned under this authorization shall be credited to the revolving fund and shall be available for further loans.

25 U.S.C. 470a: Interest or other charges shall be credited to the revolving loan fund and should be available for making loans to individual Indians and associations or corporate groups of Indians in Oklahoma.

25 U.S.C. 471: Authorized funds to be appropriated, not to exceed $250,000 annually, for loans to Indians for payment of tuition and expenses in recognized vocational and trade schools.

25 U.S.C. 631-634: Established revolving loan fund for the Navajo and Hopi Indians.

25 U.S.C. 70n-1: Authorized to be appropriated the sum of $1,800,000 for the establishment of a revolving fund from which the Secretary of the Interior may make loans to Indian tribes and bands and to other identifiable groups of American Indians for use in obtaining expert assistance for the preparation and trial of claims pending before the Indian Claims Commission. All claims were transferred to the Court of Claims in 1978, when the Indian Claims Commission terminated.

25 U.S.C. 1461-1469: Authorized (1) an additional $50,000,000 of which $41,000,000 has been appropriated; (2) administration as a single Indian Revolving Loan Fund, with sums from diverse sources; and (3) availability of funds for loans to Indians and for administrative expenses.

REVOLVING FUND FOR LOANS
Program and Performance

This fund, established by the Indian Reorganization Act of 1934, and expanded by Financing Act of 1974, as amended, provides a source of financing for Indians who are unable to borrow from other government credit agencies or from ordinary commercial lenders because of their low economic status, isolated geographic location, lack of bankable security, or other reasons. Loans are made to tribes and other Indian organizations for relending to individual members and groups of members, and to finance tribal business enterprises. Loans are also made to tribes for use by them in obtaining expert assistance to prepare and present claims pending before the Court of Claims. Direct loans are made for any purpose that will promote the economic development of the borrower, including loans for education purposes.

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
REVOLVING FUND FOR LOANS

Program and Financing (in thousands of dollars)

Identification Code: 14-4409-0-3-452	1989 Actual	1990 Estimate	1991 Estimate
Program by activities			
10.00 Total obligations (obj. class 33.0)	11,604	12,818	9,000
Financing:			
14.00 Offsetting collections from Non-Federal sources:			
Collections on loans..........	-3,859	-4,075	-4,350
Revenues......................	-6,144	-6,100	-6,540
21.90 Unobligated balance available, start of year: Fund balance..	-7,320	-5,719	-3,076
24.90 Unobligated balance available, end of year: Fund balance....	5,719	3,076	4,966
39.00 Budget Authority................	---	---	---
Relation of obligations to outlays:			
71.00 Obligations incurred, net.......	1,601	2,643	-1,890
72.90 Obligated balance, start of year: Fund balance...........	1,953	2,435	700
74.90 Obligated balance, end of year: Fund balance...........	-2,435	-700	-500
90.00 Outlays........................	1,119	4,378	-1,690

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
REVOLVING FUND FOR LOANS

STATUS OF DIRECT LOANS (in thousands of dollars)

Identification Code: 14-4409-0-3-452	1989 Actual	1990 Estimate	1991 Estimate
Position with respect to limitation on obligations:			
1111 Limitation on direct loans to the public..................	---	---	9,000
1131 Direct loan obligations exempt from limitation.......	11,604	13,000	---
1131 Direct loan obligations G-R-H Reduction.............	---	-182	---
1150 Total direct loan obligations..	11,604	12,818	9,000
Cumulative balance of direct loans outstanding:			
1210 Outstanding, start of year.....	101,058	106,494	113,937
1231 New loans: Disbursements for direct loans................	11,122	14,553	9,200
1251 Repayments: Repayments and prepayments.................	-3,859	-4,075	-4,350
1262 Adjustments: Write-offs for default.....................	-1,827	-3,035	-3,200
1290 Outstanding, end of year.......	106,494	113,937	115,587
Estimate of Direct Loan Subsidy:			
1320 Subsidy rate (in percent)......	---	---	22.9
1330 Subsidy amount (in dollars)....	---	---	2,058

Revenue and Expense (in thousands of dollars)

Loan Program			
Revenue..............................	6,144	6,100	6,540
Expenses.............................	-22,911	-3,035	-3,200
Net operating income, total	-16,767	3,065	3,340

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
REVOLVING FUND FOR LOANS

FINANCIAL CONDITION (in thousands of dollars)

	FY 1988 Actual	FY 1989 Actual	FY 1990 Estimate	FY 1991 Estimate
Assets:				
Fund balance with Treasury...........	9,273	8,154	3,776	5,466
Loans receivable, net................	100,681	85,033	92,476	94,126
Total assets.........................	109,954	93,187	96,252	99,592
Liabilities:				
Selected liabilities, accounts payable	1,953	2,435	700	500
Government equity:				
Selected equity Unexpended budget authority:				
Unobligated balance..............	7,320	5,719	3,076	4,966
Invested capital.................	100,681	85,033	92,476	94,126
Total Government equity..........	108,001	90,752	95,552	99,092
Analysis of Changes in Government Equity:				
Paid in capital:				
Opening balance....................		75,282	75,280	75,282
Closing balance....................		75,282	75,282	75,282
Retained income:				
Opening balance....................		34,672	17,905	20,970
Transactions: Net operating income		-16,767	3,065	3,340
Closing balance....................		17,905	20,970	24,310
Total Government equity end of year..		93,187	96,252	99,592

BUREAU OF INDIAN AFFAIRS
INDIAN LOAN GUARANTY AND INSURANCE FUND

(Dollar amounts in thousands)		FY 1990 Enacted To Date	FY 1991 Estimate	Inc. (+) Dec. (-) From 1991
Loan Guaranty and Insurance Program	$	4,767	11,487	+6,720

Impact of Public Law 99-177: For FY 1990 the amount of guaranteed loans made will be reduced by $630,000. In addition, $49,000 to support those loans shall be reduced from Management and Technical Assistance and Interest Subsidy.

Objective: The Indian Loan Guaranty and Insurance Fund was established pursuant to the Indian Financing Act of 1974 (IFA) and amended by the Indian Financing Act Amendments of 1984 (P.L. 98-449) and 1988 (P.L. 100-442). Those amendments authorize annual appropriations for: interest subsidy, management and technical assistance, and losses on defaulted loans, and removed the restriction on the sale of guaranteed loans to financial institutions only. This should provide a secondary market for the bureau's loan guaranty program. The purpose of the fund is to provide access to private money sources by guaranteeing or insuring loans which otherwise would not be available to Indian tribes and organizations, individual Indians, and Alaska Natives for economic development purposes. The first loan guaranty under the program was approved in August 1975. As of September 30, 1989, guarantees were approved on 468 loans totaling $344.2 million. The breakdown by fiscal year and current status is shown in Table I.

Interest Subsidies: To encourage the use of private capital, an interest subsidy is paid from the fund on loans guaranteed or insured, to reduce the Indian borrower's rate of interest to the rate charged on direct loans from the Revolving Fund for Loans. With the increase in the prime rate, the cost of the bureau's interest subsidy has increased from 16% in 1986 to over 40% in 1988. Under the Indian Financing Act, subsidy funds will be requested and obligated on a yearly basis for new loans. It is estimated that $6.9 million will be necessary for interest subsidies in FY 1991 to support approved loans. From 1976 to 1989, borrowers have paid lending institutions $70.0 million in principal, and $68.8 million in interest, a total of $138.8 million. The bureau has paid $15.1 million in interest subsidies to support these loans.

Management and Technical Assistance: The Indian Financing Act of 1974, as amended, authorized funds to be used to provide competent management and technical assistance for economic enterprises through cooperation with the Small Business Administration and other federal agencies. Contracts with private organizations to provide such services and assistance are also authorized. Management and technical assistance can also be provided on a local basis, with funds transferred to the areas for these purposes. Examples of past assistance include: training of tribal members to operate businesses, analyses of finances and worth of enterprises proposed for purchase or for expansion, feasibility studies for marketing new products, examination of methods to increase financial return, market analyses, loan packaging, and business plans. Assistance is also provided for established businesses funded under the IFA for problems that surface after the business is in operation.

Losses on Defaulted Loans: A reserve for losses is maintained to pay defaulted guaranteed loans. As of September 30, 1989, $37.0 million has been paid for defaulted loans since 1975. Collections on defaulted loans amount to $18.6 million. At the end of FY 1990, it is estimated that the bureau will have an $8.3 million reserve for losses. Outstanding loans will total $248.2 million, with a contingent liability of $215.2 million.

Collections during FY 1991 are estimated at $1.5 million from premiums on guaranteed loans, and $0.65 million from sale of assets acquired in liquidation and loan repayments, making an estimated $2.2 million available for programming for administrative expenses, interest subsidies and to support the reserve for losses.

Information on loans guaranteed as of September 30, 1989, since 1975, is as follows:

Total number of loans	468	
Loans to: Indian tribes	138	
Indian-owned corporations	84	
Indian individuals	246	
Lenders approved for participation in the program	315	
Loans: Outstanding	284	
Paid Off	92	
Defaulted	66	
Total payout for the defaulted loans -including interest (11.6% of the total dollar amount guaranteed to September. See Table II):	$37.0 million	
Of the loans defaulted:	66	$37.0
Repaid either by the borrower or liquidation	5	16.5
Cancelled	30	9.0
Repaying	5	7.9
In process of settlement	26	$ 3.6

Supplemental Surety Bond Guarantees ($50,000,000): The 1988 Amendments to the Indian Financing Act of 1974 (P.L. 100-442) authorized the bureau to supplement the guaranteed surety bonds issued by the Small Business Administration (SBA). The SBA will guarantee up to 90 percent of the losses sustained by a surety company as a result of the issuance of a bid, payment, and/or performance bond to an Indian small business concern. The bureau will guarantee the remaining portion of the bond to bring the total guaranteed to 100 percent. This action should open new fields of contracting for Indian businesses.

The bureau will enter into an agreement with SBA on the processing of supplemental surety guarantees, with SBA being the lead agency. Indian or economic enterprises which have received a surety bond guaranty from the SBA are eligible for the bureau's supplemental surety bond guaranty.

A premium fee will be paid by the surety for the bureau's supplemental surety bond guarantee. This premium will be collected by the SBA and remitted to the bureau annually. These will be used to help cover projected losses on the bonds. In addition, funds are requested to establish an escrow account from which losses can be paid.

The bureau is proposing to guarantee $50,000,000 in supplemental surety bonds for FY 1991. An escrow of $500,000 is proposed to cover losses on these bonds.

Program Proposal: A $45.0 million loan guaranty program is proposed for FY 1991. To support loans guaranteed for FY 1985 through 1990, $5.7 million is estimated to be needed for interest subsidies, or a shortage of $2.1 million. This shortage will be funded from the Reserve for Losses. The FY 1991 budget is as follows:

	(dollars in thousands) FY 1990	 FY 1991
Interest Subsidies	$3,620	$6,952
Management and Technical Assistance	500	500
Reserve for losses (Loans)	647	3,535
Reserve for losses (Surety Bonds)	---	500

Reserve for Losses (Loans)(+$2,888,000): The reserve for losses account is being increased by $2,888,000 to cover potential losses from defaulted loans.

Interest Subsidies (+$3,332,000): Funds to cover loans guaranteed from FY 1985 to FY 1990 will require an increase of $2,132,000. Between 1987 and 1989, the interest subsidy factor has increased from 25% to 40%. FY 1990 requested subsidy funds are estimated to be short $2,050,000. FY 1991 loans are estimated to need $1,200,000 for a portion of the year.

Reserve for Losses (Surety Bonds)(+$500,000): Funds are to cover estimated losses on a $50,000,000 supplemental Surety Bond program in conjunction with the Small Business Administration.

TABLE I
LOAN GUARANTY ACTIVITY
FY 1976 - FY 1989

Loans Guaranteed

Year	No.	Amount	Defaulted	Repaid	Cancel	Modified	Current
1976	58	$ 14,863,405	20	19	5	7	7
1977	44	42,872,532					
+ Mod. a/	3	333,211	15	17	7	3	5
*1978	13	8,266,875					
+ Mod. a/	3	129,585	5	7	2	1	1
1979	6	1,589,000					
Additional loan b/		624	2	2			2
1980	1	8,500,000					
Additional loan b/		10,094		1			
1981	1	1,000,000		1			
1982	8	25,880,000	2	3			3
1983	14	12,953,869	3	5	1	1	4
Additional loan c/		800,000					
1984	35	18,789,448	5	5	2	4	19
Additional loan c/		203,900					
1985	47	31,603,258	7	5	2	3	30
Additional loans c/		10,123,457					
1986	27	37,210,046	2	3	2		20
Modifications c/		188,065					
1987	58	31,469,795	1	4	2		51
Modifications c/		87,818					
1988	65	37,636,697	3	1	1		60
Modifications c/		521,350					
1989	85	58,697,816	1		2		82
Modifications c/		434,739					
Total	468	$344,165,584	66	73	26	19	284
NEW	(462)						
MOD.	(6) a/						

* The Loan Guaranty Program was closed November 1978 to new loan applications. Loan applications on hand and commitments to guarantee $36 million in new loans required reserving all available program funds. In FY 1981, the program was reopened, since two proposed guarantees for large loans were cancelled.

a/ Six original loans were completely modified and additional funds advanced.
b/ Funds were added to existing loans for protective advances.
c/ Funds were added to existing loans.

TABLE II

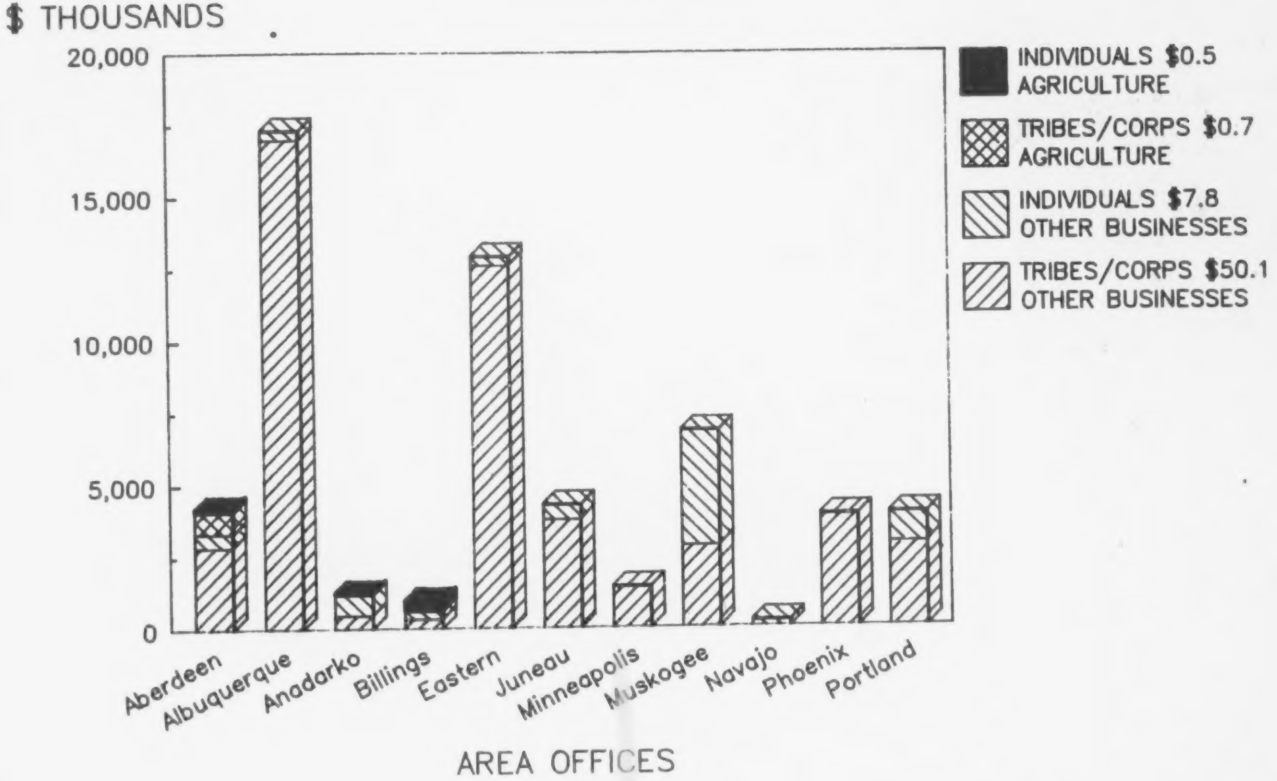
Status of Loan Guarantees as of September 30, 1989

AREA	NO.	FACE AMOUNT	OUTSTANDING CURRENT NO.	OUTSTANDING CURRENT AMOUNT	AMOUNT WHEN DEFAULTED NO.	AMOUNT WHEN DEFAULTED AMOUNT	MODIFIED OR PAID OFF NO.	MODIFIED OR PAID OFF AMOUNT	GUARANTY CANCELLED NO.	GUARANTY CANCELLED AMOUNT
Aberdeen	77	20,495,974	47	9,509,691	11	3,588,627	16	3,141,670	3	1,193,632
Albuquerque	34	45,061,923	17	39,527,518	4	906,569	10	1,546,362	3	178,500
Anadarko	43	5,790,426	14	2,019,096	11	492,828	14	1,317,449	4	1,263,531
Billings	47	16,862,137	31	6,188,311	7	5,831,844	7	1,524,000	2	605,662
Eastern	46	58,287,774	35	46,004,764	7	4,284,972	4	4,839,709		129,291
Juneau	17	49,979,000	9	18,221,669	2	22,861,586	3	11,618	3	3,348,382
Minneapolis	32	24,214,590	17	29,999,061	7	311,955	8	1,249,935		24,816
Muskogee	48	13,579,182	33	11,303,567	7	1,110,780	5	311,329	3	278,611
Navajo	11	45,910,000	9	15,455,867			1	8,500,000	1	8,200,000
Phoenix	13	26,583,000	8	21,813,140	1	13,308	3	1,641,154	1	1,364,846
Portland	93	35,985,138	60	17,778,959	7	405,116	20	4,614,878	6	3,919,302
Sacramento	7	1,416,440	4	861,191	2	110,072	1	230,000		
TOTALS	468	344,165,584	284	218,682,834	66	39,917,657	92	28,928,104	26	20,506,573
(Percent)		(100)*		(63.5)		(11.6)		(8.4)		(6.0)

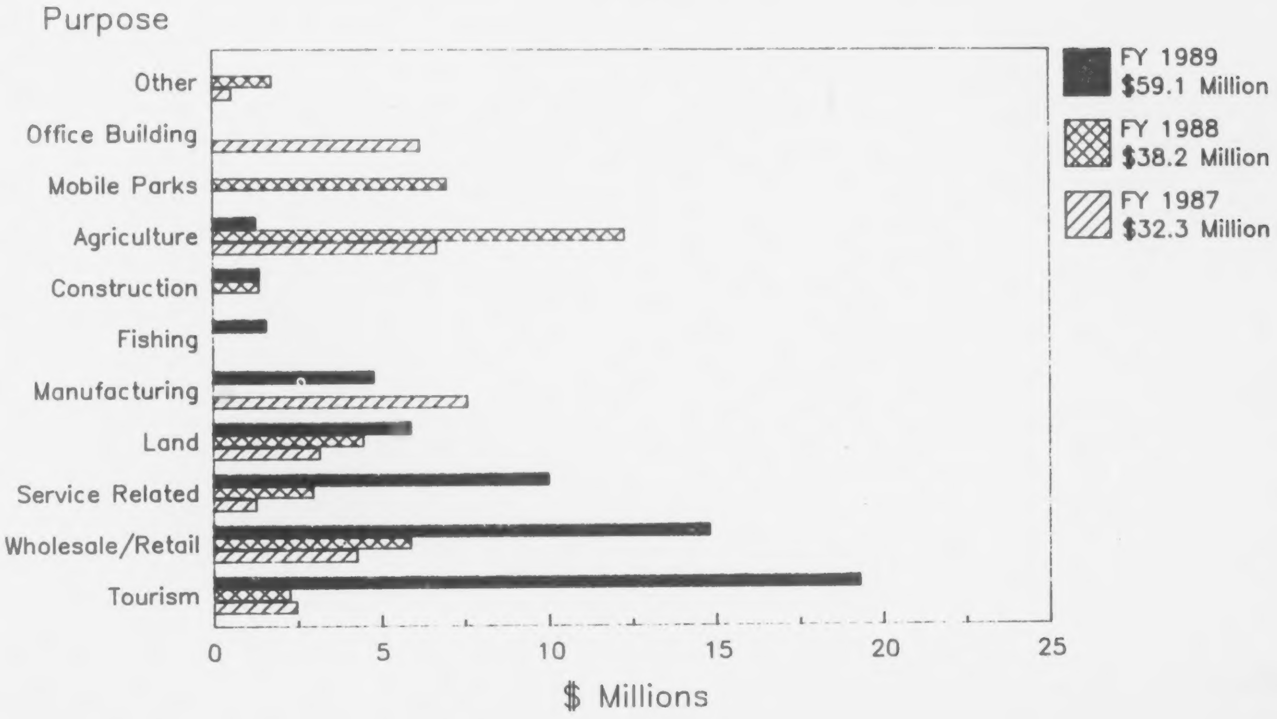
*$36,130,416 in repayments on current loans or 10.5% needs to be included in order to total 100.0%

BIA- 325

LOAN GUARANTY PROGRAM
FY 1989
$59.1 MILLION



LOAN GUARANTY PROGRAM
FY 1987 TO 1989
BY PURPOSE



DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
14-4410-0-3-452

INDIAN LOAN GUARANTY AND INSURANCE FUND

For payment of interest subsidies on new and outstanding guaranteed loans and for necessary expenses of management and technical assistance in carrying out the provisions of the Indian Financing Act of 1974, as amended (88 Stat. 77; 25 U.S.C. 1451 et seq.), [$4,767,000] $11,487,000, to remain available until expended, of which not to exceed $500,000 shall remain available for payment of losses on surety bonds guaranteed pursuant to the authority of said Act: Provided, That during fiscal year [1990] 1991, total commitments to guarantee loans pursuant to [the Indian Financing Act of 1974, as amended,] said Act, may be made only to the extent that the total loan principal, any part of which is to be guaranteed, shall not exceed [resources and authority available] $45,000,000; and that authority to guarantee supplemental surety bonds in conjunction with Small Business Administration shall not exceed $50,000,000.

(Department of the Interior and Related Agencies Appropriations Act, 1990, Public Law 101-121.)

Justification of Proposed Language Changes

Deletion: "the Indian Financing Act of 1974, as amended"

This language is redundant.

Deletion: "resources and authority available"

This language is an administrative limitation required by OMB Circular A-11; 31.5, and is not required by law.

Addition: "of which not to exceed $500,000 shall remain available for payment of losses on surety bonds guaranteed pursuant to the authority of said Act"

"and that authority to guarantee supplemental surety bonds in conjunction with Small Business Administration shall not exceed $50,000,000"

This proposed language appropriates $500,000 to be used in payment of losses on surety bonds guaranteed under the 1988 amendments to the Indian Financing Act (102 Stat. 1764: 25 U.S.C. 1497a).

Addition: "said Act"

This proposed language replaces redundant language.

Appropriation Language and Citations

This language is an administrative limitation required by OMB Circular A-11; 31.5, and is not required by law.

Authorization: The Bureau's loan guaranty program was authorized by the Indian Financing Act of April 12, 1974, as amended.

25 U.S.C. 1481-1512: Authorized a loan guaranty and insurance program not to exceed $500 million to provide access to private money sources which otherwise would not be available to Indian tribes or organizations and individual Indians. No more than 90 percent of a loan may be guaranteed or insured.

25 U.S.C. 1497(e): Authorizes funds for losses on defaulted loans.

25 U.S.C. 1511: Authorizes interest subsidies.

25 U.S.C. 1541: Authorizes competent management and technical assistance for loan recipients.

25 U.S.C. 1497a: Authorizes supplemental surety bond guarantees in association with the surety bond program administered by the Small Business Administration.

25 U.S.C. 1499: Authorizes a program for the guaranteeing (not to exceed 90 percent of the unpaid principal and interest) of taxable bonds, debentures, or other similar obligations.

INDIAN LOAN GUARANTY AND INSURANCE FUND
14-4410-0-3-452

Program and Performance

This fund was established pursuant to the Indian Financing Act of 1974. That Act was amended by the Indian Financing Act Amendments of 1984 (P.L. 98-449) and 1988 (P.L. 100-442). The purpose of the fund is to support a program of guaranteeing or insuring loans made by commercial lending institutions to Indian tribes and organizations, individual Indians and Alaska Natives for economic development purposes. An interest subsidy is paid from the fund, on loans guaranteed or insured, to reduce the Indian borrower's rate of interest to the rate charged under the bureau's direct loan program. The purpose of this program is to provide an incentive to the private lending sector to make loans to Indians which would not otherwise be made. The 1988 amendments allow the Secretary to guarantee (up to 90 percent of the unpaid principal and interest) taxable bonds, debentures, or similiar obligations issued by an organization satisfactory to the Secretary, and to provide supplemental surety bond guarantees associated with the Small Business Administration's surety bond program.

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
INDIAN LOAN GUARANTY AND INSURANCE FUND

Program and Financing (in thousands of dollars)

Identification Code: 14-4410-0-3-452	1989 Actual	1990 Estimate	1991 Estimate
Program by activities:			
Operating expenses:			
1. Interest subsidy expense........	5,665	5,671	6,952
2. Technical assistance...........	235	500	500
3. Other expenses.................	29	100	100
4. Surety Bond losses.............	---	---	400
Total operating expenses........	5,929	6,271	7,952
Capital investment....................	2,733	5,840	6,655
10.00 Total obligations..............	8,662	12,111	14,607
Financing:			
14.00 Offsetting collections from:			
Non-federal sources............	-1,253	-1,590	-2,175
Surety Bond Premiums............	---	---	-1
21.90 Unobligated balance available, start of year.............	-18,195	-14,156	-8,353
24.90 Unobligated balance available, end of year...............	14,156	8,353	7,409
39.00 Budget Authority...............	3,370	4,718	11,487
40.00 Budget Authority...............	3,370	4,767	11,487
40.00 G-R-H Reduction................	---	-49	---
43.00 Appropriation (Adjusted).......	3,370	4,718	11,487
Relation of obligations to outlays:			
71.00 Obligations incurred, net....	7,409	10,521	12,431
72.90 Obligated balance, start of year.......................	3,042	5,051	4,491
74.90 Obligated balance, end of year	-5,051	-4,491	-4,017
90.00 Outlays......................	5,400	11,081	12,905

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
INDIAN LOAN GUARANTY AND INSURANCE FUND

Status of Direct Loans (in thousands of dollars)

Identification Code: 14-4410-C-3-452	1989 Actual	1990 Estimate	1991 Estimate
Cumulative balance of direct loans outstanding:			
1210 Outstanding, start of year.......	15,245	13,601	15,420
New loans:			
1231 Direct loans disbursements.....	142	100	100
1232 Disbursements for guaranty loan claims........................	2,543	5,640	7,000
Repayments:			
1251 Repayments and prepayments.....	-230	-217	-350
1252 Repayments of defaulted guaranteed loans.............	---	-100	-300
Adjustments:			
1262 Write-offs for default.........	-4,604	-4,500	-3,500
1264 Other adjustments, net 1/......	505	896	642
1290 Outstanding, end of year.........	13,601	15,420	19,012

1/ Unguaranteed portion of defaulted loans assigned to the Bureau of Indian Affairs by commercial lenders.

OBJECT CLASSIFICATION (in thousands of dollars)

11.0 Personnel........................	17	---	---
12.1 Benefits.........................	3	---	---
21.0 Travel...........................	1	10	10
23.0 Other expenses...................	---	---	---
25.0 Other services...................	15	451	500
26.0 Supplies & Materials.............	10	---	---
31.0 Equipment........................	77	25	25
33.0 Investments and loans	2,758	5,740	7,500
41.0 Grants, subsidies, and contributions	5,780	5,885	6,572
43.0 Late Charges.....................	1		
99.9 Total Obligations................	8,662	12,111	14,607

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
INDIAN LOAN GUARANTY AND INSURANCE FUND

Status of Guaranteed Loans (in thousands of dollars)

Identification Code: 14-4410-0-3-452	1989 Actual	1990 Estimate	1991 Estimate
Position with respect to limitation on commitments:			
2111 Limitation on guaranteed loans by private lenders.......	---	---	45,000
2131 Guaranteed loan commitments exempt from limitation.........	59,133	45,000	---
G-R-H Reduction................	---	-630	
2150 Total guaranteed loan commitments	59,133	44,370	45,000
Cumulative balance of guaranteed loans outstanding:			
2210 Outstanding, start of year.......	169,939	218,683	248,233
2231 Disbursements of new guaranteed loans..........................	59,133	44,370	45,000
2251 Repayments and prepayments.......	-6,699	-8,554	-9,667
Adjustments:			
2261 Terminations for default that result in direct loans.........	-2,817	-6,266	-7,172
2264 Other Adjustments	-873	---	---
2290 Outstanding, end of year.........	218,683	248,233	276,394
2299 Memorandum: U.S. contingent liability for guaranteed loans outstanding, end of year.......	189,677	215,217	239,633
Estimate of guaranteed loan subsidy:			
2320 Subsidy amount (in percent).......	---	---	21.0
2330 Subsidy amount (in thousands of dollars).......................	---	---	9,426

Status of Bond Guarantees (in thousands of dollars)

BIA contingent liability for new surety bond guarantees..............	---	---	50,000

REVENUE AND EXPENSE (in thousands of dollars)

Loan Guaranty and Insurance Fund Program:			
Revenue..........................	1,023	693	670
Expense..........................	-3,187	-6,643	-7,168
Write-offs.......................	-4,604	-4,500	-3,500
Net operating loss, total............	-6,768	-10,450	-9,998

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
INDIAN LOAN GUARANTY AND INSURANCE FUND

FINANCIAL CONDITION (in thousands of dollars)

	1988 Act.	1989 Act.	1990 Est.	1991 Est.
Assets:				
Selected assets:				
Fund balance with Treasury.........	21,237	19,207	11,921	9,818
Advances.........................	561	345	---	---
Assets acquired through default....	13,714	12,518	14,343	17,935
Equipment........................	86	130	204	204
Total assets....................	35,598	32,200	26,468	27,957
Liabilities:				
Selected liabilities:				
Accounts payable..................	193	339	---	---
Government equity:				
Selected equities:				
Unexpended budget authority:				
Unobligated balance...............	18,195	14,156	7,725	6,141
Undelivered orders	3,410	5,051	4,196	3,677
Invested capital..................	13,800	12,654	14,547	18,139
Total Government equity..........	35,405	31,861	26,468	27,957

	1989 Act.	1990 Est.	1991 Est.
Analysis of Changes in Government Equity:			
Paid in capital:			
Opening balance...................	52,640	56,010	60,728
Appropriation.....................	3,370	4,718	11,487
Closing balance...................	56,010	60,728	72,215
Retained income:			
Opening balance...................	-17,042	-23,810	-34,260
Transaction: Net operating loss...	-6,768	-10,450	-9,998
Closing balance...................	-23,810	-34,260	-44,258
Total Gov't equity (end of year).	32,200	26,468	27,957

ADMINISTRATIVE PROVISIONS

Appropriations for the Bureau of Indian Affairs (except the revolving fund for loans and the Indian loan guarantee and insurance fund) shall be available for expenses of exhibits, and purchase of not to exceed [162] 150 passenger carrying motor vehicles, of which not to exceed 115 shall be for replacement only[: Provided, That the property known as "Madrona Point" located on Orcas Island, Washington, shall be acquired in trust by the United States for the Lummi Indian Tribe under the conditions that it shall be preserved in its natural condition and shall not be developed for any commercial or residential purpose, except for a caretaker dwelling, a visitor or cultural center, or the interment of human remains: Provided further, That now and hereafter, the tribe, by contract, may impose additional restrictions: Provided further, That after acquisition by the United States, the property shall permanently be subject to the civil, regulatory (not including tax) and criminal jurisdiction of the State of Washington and its political subdivisions, concurrently with the Lummi Indian Tribe: Provided further, That except as provided herein, such grant of jurisdiction to the State shall have the same limitations as set forth in 18 U.S.C. 1162(b)].

(Department of the Interior and Related Agencies Appropriations Act, 1990, Public Law 101-121.)

Justification of Proposed Language Change

Deletion: ": Provided, That the property known as "Madrona Point" located on Orcas Island, Washington, shall be acquired in trust by the United States for the Lummi Indian Tribe under the conditions that it shall be preserved in its natural condition and shall not be developed for any commercial or residential purpose, except for a caretaker dwelling, a visitor or cultural center, or the interment of human remains: Provided further, That now and hereafter, the tribe, by contract, may impose additional restrictions: Provided further, That after acquisition by the United States, the property shall permanently be subject to the civil, regulatory (not including tax) and criminal jurisdiction of the State of Washington and its political subdivisions, concurrently with the Lummi Indian Tribe: Provided further, That except as provided herein, such grant of jurisdiction to the State shall have the same limitations as set forth in 18 U.S.C. 1162(b)"

This language is not needed for FY 1991.

Appropriation Language and Citations

Appropriations for the Bureau of Indian Affairs (except the revolving fund for loans and the Indian loan guarantee and insurance fund) shall be available for expenses of exhibits and purchase of not to exceed...passenger carrying motor vehicles, of which...shall be for replacement only.

31 U.S.C. 638a(a)

31 U.S.C. 638a(a) provides "Unless specifically authorized by the appropriation concerned or other law no appropriation shall be expended to purchase or hire passenger motor vehicles for any branch of the Government..."

JUSTIFICATION

Appropriation: Operation of Indian Programs

Activity: Education

Vehicles: School buses - various sizes, 15 for replacement.

Activity: Law Enforcement

Vehicles: Sedans fully equipped for police work, 35 new vehicles and 100 for replacement, at a cost of $13,500 per vehicle, required to carry out law enforcement throughout the bureau.

Summary of Proposed Acquisition of Certain Types of Vehicles, FY 1991

Type	Total	New	Replacement
Police	135	35	100
School Buses	15	0	15

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
14-9925-0-2-999

MISCELLANEOUS PERMANENT APPROPRIATIONS

Beginning October 1, 1990 and thereafter, amounts collected by the Secretary in connection with the Alaska Resupply Program (P.L. 77-457), shall be deposited into a special fund to be established in the Treasury, to be available to carry out the provisions of the Alaska Resupply Program, such amounts to remain available until expended: Provided, That unobligated balances of amounts collected in fiscal year 1990 and credited to the Operation of Indian Programs Account as offsetting collections, shall be transferred and credited to this account.

Department of the Interior and Related Agencies Appropriations Act, 1990, Public Law 101-121.

Justification of Proposed Language Change

Addition: "Beginning October 1, 1990 and thereafter, amounts collected by the Secretary in connection with the Alaska Resupply Program (P.L. 77-457), shall be deposited into a special fund to be established in the Treasury, to be available to carry out the provisions of the Alaska Resupply Program, such amounts to remain available until expended: *Provided*, That unobligated balances of amounts collected in fiscal year 1990 and credited to the Operation of Indian Programs Account as offsetting collections, shall be transferred and credited to this account."

Language was added in order to transfer the Alaska Resupply Program from the Operation of Indian Programs to the Miscellaneous Permanent Appropriations account.

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
FY 1991

Program Title: Miscellaneous Permanent Appropriations

Desccription:

1. Claims and Treaty Obligations - $2,000,000

   A. Fulfilling treaties with the Senecas of New York - $6,000. This money is to be paid in equal shares to members of the Seneca Nation as provided by the Act of February 19, 1831 (4 Stat. 442).

   B. Fulfilling treaties with the Six Nations of New York - $4,500. The Six Nations is comprised of the Senecas, Tonawanda Band of Senecas, Tuscarora, Onondaga, Oneida, and Cayuga Tribes. This money is allocated as follows: $2,700 to the New York Indians for the purchase of dress goods, and $1,800 distributed per capita to the Oneida Indians under the jurisdiction of the Great Lakes Agency, Wisconsin, as provided by the Treaty of November 11, 1794 and the Act of February 25, 1979 (1 Stat. 618, 619).

   C. Fulfilling treaties with the Pawnees of Oklahoma - $30,000. This money is distributed per capita to the Pawnees as provided by the Treaty of September 24, 1857, Article 2 (11 Stat. 729).

   D. Payments to Indians of the Sioux Reservation - $1,959,500. This is an anual charge against the general fund of the Treasury, the amount being indefinite until individual applications for payments are made and approved. Sioux benefits were originally for articles of farming equipment and stock or, more commonly today, the commuted cash value of such articles. The approved commuted value of an individual share of Sioux benefits, effective October 1, 1989 is $4,240.32. The legal authority for these payments is found in the Act of March 2, 1889, section 17 (25 Stat. 894); Act of June 10, 1896 (29 Stat. 334); and the Act of June 21, 1906 (34 Stat. 326).

2. Operation and Maintenance, Indian Irrigation Systems - $22,850,000. Funds obtained from the collection of assessments against water users on various projects are deposited in the Treasury to the credit of the respective projects. Funds are used for such purposes as annual cleaning of canals and laterals to remove silt, moss, and weed growth; repair and replacement of water control structures; operation and maintenance of reservoirs, dams and pumping plants, including the purchase of electrical energy; payment to other irrigation systems on Indian lands included and benefitted; repair of flood damage; etc. The various projects located on Indian reservations are thus maintained in good operation, permitting the facilities constructed by the government to be utilized by the Indian and non-Indian landowners within the project who depend upon proper operation and maintenance of the projects for irrigation farming and subsistence. As authorized by the FY 1984 Appropriations Act (P.L. 98-146, dated November 4, 1983), collections are invested in interest-bearing securities until required for project operations.

3. Power Systems, Indian Irrigation Projects - $37,048,000. Funds are obtained from earned revenue deposited in the Treasury and credited to the respective projects. Funds are used for the operation and maintenance of two hydrogenerating plants; a diesel power generating plant; transmission lines; distribution systems and pumping plants for the use of each project irrigation system; the purchase of power for re-sale and for all necessary expenses for operation of power systems on an actual cost basis. A project power system's primary purpose is to furnish

electrical energy to the project for irrigation and drainage pumping and also to furnish energy to mining and milling properties, public utilities and domestic consumers on the project proper, in nearby towns and villages, and in outlying farming areas. The energy supplied by these projects (San Carlos, Colorado River, and Flathead Indian Reservation) in many instances is the only source of electrical energy available to the consumers. Approximately 521 million kilowatt-hours are transmitted over all projects. Annually, the distribution systems serve approximately 27,800 domestic and commercial consumers. As with irrigation collections, power collections and reserves are invested in interest-bearing securities until required for power system operations as authorized by the FY 1984 Appropriations Act (P.L. 98-146, dated November 4, 1983).

4. Alaska Resupply Program - $6,243,000: Revenues collected from the operation of the Alaska Resupply Program are used to operate and maintain this program

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
14-9925-0-2-999
MISCELLANEOUS PERMANENT APPROPRIATIONS

Program and Performance

1. Claims and Treaty Obligations. Payments are made to fulfill treaty obligations with the Senecas of New York (Act of February 19, 1831), the Six Nations of New York (Treaty of November 11, 1794), and the Pawnees of Oklahoma (the Treaty of September 24, 1857); and benefit claims to the Sioux Indians (Acts of March 2, 1889; June 10, 1896; and June 21, 1906).

2. Operation and Maintenance, Indian Irrigation Systems. Revenues derived from charges for operation and maintenance of Indian irrigation projects are used to defray, in part, the cost of operating and maintaining these projects (60 Stat. 895). The Secretary of the Interior is authorized to invest the funds, derived from collections, in interest-bearing securities until required for project operations, pursuant to P.L. 98-146, dated November 4, 1983.

3. Power Systems, Indian Irrigation Projects. Revenues collected from the sale of electric power by the Colorado River, Flathead, and San Carlos power systems are used to operate and maintain these systems (60 Stat. 895; 65 Stat. 254). The Secretary of the Interior is authorized to invest the funds, derived from collections, in interest-bearing securities until required for power system operations, pursuant to P.L. 98-146, dated November 4, 1983.

4. Alaska Resupply Program: Revenues collected from operation of the Alaska Resupply Program are used to operate and maintain this program (P.L. 77-457, 56 Stat. 95).

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
MISCELLANEOUS APPROPRIATIONS

Program and Financing (in thousands of dollars)

Identification code 14-9925-0-2-999	1989 Actual	1990 Estimate	1991 Estimate
Program by activities:			
1. Claims and Treaty Obligations	1,003	1,972	2,000
2. Operation and Maintenance, Indian Irrigation Systems	18,855	18,443	21,479
3. Power Systems, Indian Irrigation Projects	30,633	31,211	34,825
4. Alaska Resupply Program	--	--	6,243
10.0001 Total obligations	50,491	51,626	64,547
Financing:			
21.4001 Unobligated balance available, start of year:	(40,487)	(43,530)	(46,968)
Unrealized Discounts	--	7	
24.4001 Unobligated balance available, end of year:	43,530	46,968	50,562
Unrealized Discounts	(7)	--	
60.0001 Budget authority appropriation, Permanent, indefinite	53,527	55,071	68,141
Relation of obligations to outlays:			
71.0001 Obligations incurred, net	50,491	51,626	64,547
72.4001 Obligated balance, start of year	7,840	5,355	2,598
74.40001 Obligated balance, end of year	(5,355)	(2,598)	(10,007)
90.0001 Outlays	52,976	54,383	57,138
Distribution of budget authority:			
1. Claims and Treaty Obligations	1,003	2,000	2,000
2. Operation and Maintenance, Indian Irrigation Systems	20,056	19,663	22,850
3. Power Systems, Indian Irrigation Projects	32,468	33,408	37,048
4. Alaska Resupply Program	--	--	6,243
Total	53,527	55,071	68,141
Distribution of outlays :			
1. Claims and Treaty Obligations	967	2,000	2,000
2. Operation and Maintenance, Indian Irrigation Systems	19,183	21,124	21,414
3. Power Systems, Indian Irrigation Projects	32,826	31,259	29,155
4. Alaska Resupply Program			4,569
Total	52,976	54,383	57,138

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
MISCELLANEOUS PERMANENT APPROPRIATIONS

Object Classification (in thousands of dollars)

Identification code 14-9925-0-2-999		1989 Actual	1990 Estimate	1991 Estimate
	Personnel Compensation			
11.1	Full-time permanent..............	10,015	10,204	12,783
11.3	Other than full-time positions...	1,107	1,183	1,413
11.5	Other personnel compensation.....	388	415	495
11.9	Total personnel compensation.....	11,510	11,802	14,691
12.1	Civilian personnel benefits......	2,116	2,212	2,701
21.0	Travel & transportation of persons........................	151	161	193
22.0	Transportation of things.........	578	618	738
23.2	Communications, utilities, and and other rent.................	10,549	10,740	13,467
24.0	Printing and Reproduction........	(6)	0	0
25.0	Other Services...................	8,175	8,332	10,428
26.0	Supplies and materials...........	14,190	14,410	18,342
31.0	Equipment........................	668	714	853
32.0	Lands and structures.............	5	5	6
41.0	Grants, subsidies, and contributions..................	2,536	2,611	3,104
42.0	Insurance claims and idemnities..	8	9	10
43.0	Interest and dividends...........	11	12	14
99.0	Total obligations................	50,491	51,626	64,547

Personnel Summary

	1989 Actual	1990 Estimate	1991 Estimate
Total number of permanent positions....	408	340	340
Total compensable work years:			
Full-time equivalent employment.....	480	410	410
Full-time equivalent overtime and holiday hours....................	8	8	8

Justification of Program and Performance

Activity: Operation and Maintenance of Quarters

(Dollar amounts in thousands)

Program Elements		FY 1990 Enacted To Date	FY 1990 Adjusted Approp.	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) From Base
Operation and	$	6,330	6,330	6,330	6,330	--
Maintenance of Quarters	(FTE)	(123)	(123)	(123)	(123)	--
Total	$	6,330	6,330	6,330	6,330	--
Requirements	(FTE)	(123)	(123)	(123)	(123)	--

Impact of Public Law 99-177

	FY 1990 Enacted To Date	Reduction Pursuant to P.L. 99-177	FY 1990 Adjusted Approp.
Operation and Maintenance of Quarters	6,330	No impact	6,330

Objectives: To meet quarters operation and maintenance (O&M) needs, with emphasis on critical health and safety needs as they arise and through preventive maintenance programs; to comply with the Department's commitment to furnish quarters that are decent, safe, sanitary and energy efficient; to repair or refurbish quarters and appurtenant structures; to ensure efficient utilization of quarters on existing facilities and to equitably manage the continuing costs of repair, operation, and maintenance. Studies in conjunction with the Office of Construction Management (DOI) and the BIA's Division of Property Management are to be undertaken to evaluate, recommend and establish standards and policies for management of quarters. To continue toward meeting the bureau's goal of reducing unneeded quarters. To ensure standard reporting systems capable of controlling, tracking, and reporting all quarters inventories, income and expenditures.

Base Program ($6,330,000; FTE 123): The base program encompasses approximately 3,796 quarters units, ranging in age from 3 to 80+ years, containing approximately 5,926,720 square feet bureauwide. Rental receipts anticipated at approximately $6,330,000, will be expended for quarters O&M. Categories of work include general repair, operation and maintenance code and regulatory compliance (providing for handicapped use accessibility, improvement of energy efficiency, and correction of immediate health and life safety deficiencies), site improvements, utility repair and replacement, street and general access repair.

Quarters rental receipts collected under the jurisdiction of an Area Director are to be used at locations, under the Area Director's jurisdiction, having the greatest need, regardless of where the collections occur. Newly constructed quarters have substantially less need for maintenance funds than older quarters. Older housing is more costly to maintain, and maintenance costs are continuing to escalate as a result of deterioration. Likewise, due to age, maintenance costs often surpass rental rates collected, resulting in an inadequate funding source below that required to protect the Government's capital investment. Additionally, as quarters are demolished or turned over to the tribes, remaining rental receipts from that location will be transferred to other locations.

Area Office Operations: Management at the area level includes on-site compliance reviews, quarters O&M program development, preventive maintenance, improvement and repair, quarters inventory and backlog update, implementation of rental rates and CPI adjustments.

Central Office Operations: In conjunction with the Office of Construction Management (DOI), the BIA's Division of Property Management provides quarters management oversight including reviewing and developing policy, coordinating bureauwide development of quarters O&M program, providing policy guidance and direction, providing oversight of implementation of rental rates and CPI adjustments, monitoring the quarters financial account, and conducting policy compliance reviews.

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
OPERATION AND MAINTENANCE OF QUARTERS

Program and Financing (in thousands of dollars)

14-5051-6-2-452	89 Actual	90 Estimate	91 Estimate
Program by activities:			
10.00 Total Obligations...............	5,527	6,000	6,200
Financing:			
21.40 Unobligated balance available, start of year..................	-2,341	-3,139	-3,469
24.40 Unobligated balance available, end of year....................	3,139	3,469	3,599
60.00 Budget authority	6,326	6,330	6,330
Relation of obligations to outlays:			
71.00 Obligations incurred, net......	5,527	6,000	6,200
72.40 Obligated balance, start of year..................	1,294	989	646
74.40 Obligated balance, end of year	- 989	-646	-508
90.00 Outlays.........................	5,832	6,343	6,338

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
OPERATION & MAINTENANCE OF QUARTERS

Object Classification (in thousands of dollars)

14-5051-6-2-452		89 Actual	90 Estimate	91 Estimate
Direct Obligations:				
	Personnel Compensation:			
11.1	Full-time permanent............	2,794	3,100	3,100
11.3	Other than full-time positions.	369	640	640
11.5	Other personnel compensation...	52	55	55
11.9	Total personnel compensation.	3,215	3,795	3,795
	Personnel Benefits:			
12.1	Civilian........................	463	460	460
13.0	Benefits for former personnel..	0	0	0
21.0	Travel & transportation of persons......................	65	70	70
22.0	Transportation of things.......	94	90	90
23.3	Communications, utilities, and other rent..................	-19	250	250
25.0	Other services.................	497	400	400
26.0	Supplies and materials.........	1,013	835	1,035
31.0	Equipment......................	121	100	100
32.0	Lands and structures...........	72	0	0
41.0	Grant,subsidies,and contributions........................	1		
43.0	Interest and dividends.........	2	--	--
99.9	Total obligations............	5,527	6,000	6,200

Personnel Summary

Total number of permanent positions..	16	16	16
Total compensable work years:			
Full-time equivalent employment...	123	123	123
Full-time equiv. of overtime and holiday hours.....................	2	2	2

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
TRUST FUNDS
14-8366-0-7-452

COOPERATIVE FUND (PAPAGO)

Program and Performance

This Cooperative Fund, established by section 313 of the Southern Arizona Water Rights Settlement Act, P.L. 97-293 (96 Stat. 1274-1285), provides a source of funds for the Secretary of the Interior to carry out the obligations of the Secretary under sections 303, 304 and 305 of the Act. Only interest accruing to the fund may be expended. The law provides, however, that no such interest can be spent prior to the earlier of 1992 or the completion of the main project works of the Central Arizona Project.

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
COOPERATIVE FUND (PAPAGO)

Program and Financing (in thousands of dollars)

Identification code: 14-8366-0-7-452	1989 Actual	1990 Estimate	1991 Estimate
Financing:			
21.4001 Unobligated balance available, start of year:			
Treasury balance..................	(737)	(522)	(18,151)
U.S. Securities (par)............	(15,570)	(17,075)	
Unrealized Discounts..............	254	517	
24.4001 Unobligated balance available, end of year:			
Treasury balance..................	522	--	--
U.S. Securities (par)............	17,075	18,151	19,019
Unrealized Discounts..............	(517)	--	
60.0001 Budget authority appropriation, (permanent, indefinite)..........	1,027	1,071	868

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
14-2202-0-1-806

EASTERN INDIAN LAND CLAIMS SETTLEMENT FUND

Program and Performance

Rhode Island Indian Claims Settlement Fund. Payments were made to the fund as authorized by P.L. 95-395, September 30, 1978, for settlement of certain Indian land claims in the State of Rhode Island.

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
EASTERN INDIAN LAND CLAIMS SETTLEMENT FUND

Program and Financing (in thousands of dollars)

Identification code: 14-2202-0-1-806	1989 Actual	1990 Estimate	1991 Estimate
Program by activities:			
Rhode Island Indian claims settlement fund..................................	39	0	--
10.00 Total obligations................	39	0	--
Financing:			
21.4001 Unobligated balance available, start of year:	(39)	0	--
24.4001 Unobligated balance available, end of year.............	0		
40.0001 Budget Authority	0	0	--
Relation of obligations to outlays:			
71.0001 Obligations incurred, net.....	39	0	--
90.0001 Outlays.......................	39	0	--

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
14-9973-0-7-999

[MISCELLANEOUS TRUST FUNDS]

[Notwithstanding any other provision of law, the Secretary shall retain the amount of excess interest drawn from the Treasury during the period of January 1, 1987, to February 28, 1989, to compensate the trust funds for the amount of interest that would have been earned had all available trust funds been invested in the Treasury during the period from June 30, 1985, to December 31, 1986.]

Department of the Interior and Related Agencies Appropriations Act, 1990, Public Law 101-121.

Justification of Proposed Language Change

Deletion: "Notwithstanding any other provision of law, the Secretary shall retain the amount of excess interest drawn from the Treasury during the period of January 1, 1987, to February 28, 1989, to compensate the trust funds for the amount of interest that would have been earned had all available trust funds been invested in the Treasury during the period from June 30, 1985, to December 31, 1986."

Language is not needed for FY 1991.

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
14-9973-0-7-999
MISCELLANEOUS TRUST FUNDS

Program and Performance

1. TRIBAL TRUST FUNDS (14X8365)-- Tribal funds are deposited into a consolidated account in the U.S. Treasury pursuant to: (1) general or specific acts of Congress enacting the judgment awards of the Indian Claims Commission and the Court of Claims; and (2) Federal management of tribal real properties, the titles to which are held in trust for the tribes by the United States. These funds are available to the respective tribal groups for various purposes, under various acts of Congress, and are subject to the provisions of tribal constitutions, bylaws, charters, and resolutions of the various tribes, bands, or groups. Tribal funds may be used for the conduct of tribal financial programs, enterprises, businesses, per capita payments, and other tribal affairs. These funds are not federal monies as the funds belong strictly to the tribes. The bureau only invests and monitors the numerous tribal accounts in fulfilling its trust responsibility as the respective trustee of the United States. These funds are reported annually in the budget schedules to give Congress the opportunity to review the activity conducted under the authorities extended to the Secretary of the Interior.

2. FUNDS CONTRIBUTED FOR THE ADVANCEMENT OF THE INDIAN RACE (14X8563)-- This program accounts for any contributions, donations, gifts, etc., which are to be used for the benefit of American Indians in accordance with the donor's wishes (82 Stat. 171).

3. BEQUEST OF GEORGE C. EDGETER (14X8060)-- This account consists of a bequest, the principal of which is invested in U.S. Treasury bonds and notes, and the interest is to be used for the relief of American Indians (82 Stat. 171), as specified by the donor's wishes.

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
14-9973-0-7-999
MISCELLANEOUS TRUST FUNDS

Analysis of Changes in Requirements
(in thousands of dollars)

	Budget Authority	Outlays
FY 1989 Total	$464,098	$310,266
Decrease		
Direct Program	—	—
Miscellaneous Permanents (Tribal)	-68,779	85,734
FY 1990 Total	$395,319	$396,000
Increases		
Program increase:		
Miscellaneous Permanents (Tribal)	-18,105	-18,605
FY 1991 Total	$377,214	$377,395

Highlight Statement

Funds are deposited into a consolidated account in the U.S. Treasury pursuant to: (1) general or specific acts of Congress enacting the judgment awards of the Indian Claims Commission and the Court of Claims; and (2) Federal management of tribal real properties, the titles to which are held in trust for the tribes by the United States. These two sources of funds contribute approximately 35% and 65%, respectively, of the tribal trust fund income. Approximately 300 Indian tribes, bands, or identifiable groups maintain funds in the U.S. Treasury account; these monies are separately identified and controlled in some 700 accounts by the Bureau of Indian Affairs.

Tribal funds are available to the respective tribal groups for various purposes, under various acts of Congress, and are subject to the provisions of tribal constitutions, bylaws, charters, and resolutions of the various tribes, bands, or groups. Tribal funds may be used for the conduct of tribal financial programs, enterprises, businesses, per capita payments, and other tribal affairs.

The Act of October 19, 1973 (87 Stat. 466), provides general authority for the distribution of funds appropriated in satisfaction of judgments of the Indian Claims Commission and the Court of Claims, subject to certain conditions, including the development of a plan for the use of the funds. Funds derived from the management of tribal trust properties are available for tribal use in accordance with approved budgets under annual/definite, or permanent/indefinite authorizations.

Funds programmed under permanent/indefinite authorization are made available under legislation which provided permanent authority for the Secretary of the Interior to withdraw from tribal accounts in the Treasury those funds needed to carry out programs designed by a particular tribe and approved by the Secretary for the conduct of tribal operations, including but not limited to management of tribal resources and other programs designated to improve the situation of the general membership. Funds can be disbursed through either the Regional Disbursing Office or the Indian Service Special Disbursing Agents' accounts, or funds can be advanced to tribes for disbursement by their bonded tribal treasurers under approved plans of operation. Although these funds do not require annual approval by Congress, they are reported annually in the budget schedule to give Congress an opportunity to review the activity conducted under the authorities extended to the Secretary of the Interior.

No part of the funds contained in this estimate represents a charge upon the Federal Treasury. This item reflects the disbursement of funds to the credit of Indian tribes or bands under numerous special acts of Congress in compliance with the terms of the various trusts and for carrying out tribal programs recommended by the tribal governing bodies with the approval of the Assistant Secretary for Indian Affairs.

The budget schedule under the Permanent Authorization reflects disbursements from the tribal trust funds authorized by permanent legislation.

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
MISCELLANEOUS TRUST FUNDS

Program and Financing (in thousands of dollars)

Identification code 14-9973-0-7-999	1989 Actual	1990 Estimate	1991 Estimate
Program by activities:			
1. Miscellaneous permanent (tribal funds)...................	310,871	395,532	377,205
2. Other trust funds..................	85	31	28
10.0001 Total obligations .... (Obj. class 44)	310,956	395,563	377,233
Financing:			
21.4001 Unobligated balance available, start of year:			
Treasury balance..................	(899,851)	(1,139,944)	(1,327,072)
U.S. Securities (par).............	(276,112)	(187,790)	0
Unrealized Discounts	1,789	418	--
24.4001 Unobligated balance available, end of year:			
Treasury balance..................	1,139,944	1,327,072	1,327,053
U.S. Securities (par).............	187,790	--	-
Unrealized Discounts	(418)	--	-
39.0001 Budget Authority..............	464,098	395,319	377,214
Relation of obligations to outlays:			
71.0001 Obligations incurred, net.....	310,956	395,563	377,233
72.4001 Obligated balance, start of year...............	1,358	2,048	1,611
74.40001 Obligated balance, end of year.................	(2,048)	(1,611)	(1,449)
90.0001 Outlays.......................	310,266	396,000	377,395
Distribution of budget authority:			
Indian tribal funds.....................	464,046	395,272	377,171
Funds contributed for the advancement of the Indian race..................	50	47	43
Bequest of George C. Edgeter...........	0	0	0
Distribution of outlays by account:			
Indian tribal funds.....................	310,870	395,885	377,297
Funds contributed for the advancement of the Indian race..................	102	115	98
Bequest of George C. Edgeter...........	0	0	0

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
MISCELLANEOUS TRUST FUNDS

Program and Financing (in thousands of dollars)

Identification code 14-9973-0-7-999	1989 Actual	1990 Estimate	1991 Estimate
Unexpended balance, start of year:			
U.S. Securities:			
Par value	276,112	187,790	1,327,072
Unrealized discounts	(1,789)	(418)	--
Cash	899,851	1,139,944	--
Balance of fund, start of year	1,174,174	1,327,316	1,327,072
Cash income during the year:			
Government receipts	1,123	705	705
Proprietary receipts	367,237	353,122	341,487
Intragovernmental tranactions	95,738	41,492	35,022
Income under present law	464,098	395,319	377,214
Total Cash Income	464,098	395,319	377,214
Cash outgo during the year:			
Outgo under present law	310,266	396,000	377,395
Total Cash Outgo	310,266	396,000	377,395
Unexpended balance, end of year:			
U.S. Securities:			
Par value	1,139,944	1,327,072	1,327,053
Unrealized discounts	(418)	--	
Cash	187,790	--	
Balance of fund, end of year	1,327,316	1,327,072	1,327,053

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
14-2368-0-1-452

[PAYMENT TO NAVAJO REHABILITATION TRUST FUND]

[For Navajo tribal rehabilitation and improvement activities in accordance with the provisions of section 32(d) of Public Law 93-531, as amended (25 U.S.C. 640d-30), including necessary administrative expenses, $800,000 to remain available until expended.]

Department of the Interior and Related Agencies Appropriations Act, 1990, Public Law 101-121.

Justification of Proposed Language Change

Deletion: "For Navajo tribal rehabilitation and improvement activities in accordance with the provisions of section 32(d) of Public Law 93-531, as amended (25 U.S.C. 640d-30), including necessary administrative expenses, $800,000 to remain available until expended."

The deleted language is not required as no funds are requested for an additional payment to Navajo Rehabilitation Trust Fund.

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
14-2368-0-1-452

NAVAJO REHABILITATION TRUST FUND

Program and Performance

A payment to the Navajo Rehabilitation Trust Fund was made in FY 1990 pursuant to section 640d-30 of Public Law 93-531. Funds will be used to improve the economic, social, and educational conditions of Navajo families and communities affected by the relocation activities.

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REHABILITATION TRUST FUND

Program and Financing (in thousands of dollars)

Identification code 14-2368-0-1-452	1989 Actual	1990 Estimate	1991 Estimate
Program by activities:			
1. Navajo Rehabilitation Trust Fund...		600	250
10.0001 Total obligations		600	250
Financing:			
21.4001 Unobligated balance available, start of year:			
Treasury balance..................		0	(237)
U.S. Securities (par).............			
24.4001 Unobligated balance available, end of year:			
Treasury balance..................		237	0
U.S. Securities (par).............			
39.0001 Budget Authority..............		837	13
Relation of obligations to outlays:			
71.0001 Obligations incurred, net.....		600	250
72.4001 Obligated balance, start of year...............		0	0
74.40001 Obligated balance, end of year.................		0	0
90.0001 Outlays.......................		600	250

DEPARTMENT OF THE INTERIOR

FY 1991 Budget for Consulting Services

Bureau: Bureau of Indian Affairs

Appropriation Account Title Type of Consulting Arrangement Program Requiring Services	FY 1991 Request (Dollars in Thousands)	Description of Services Being Acquired
Operation of Indian Programs (14-2100-0-999)		
Personnel Appointments	-0-	
Procurement Contracts		
Indian Education	15	Technical assistance for the Effective Schools Program (at least 5 different sessions at $5,000 each) - nationwide schools
Indian Education	30	Technical assistance for the Effective Schools Program - individual schools and substance abuse training of staff at the local schools
Natural Resources	100	Program Evaluation Services - Geographic Information Systems
Natural Resources	1,200	Technical Assistance - Geographic Information Systems
Trust Responsibilities Trust Funds Management	225	ADP investment portfolio accounting services, technical assistance to the Investment Program
Advisory Committee Members	-0-	
Account Total	1,570	
Bureau Total	1,570	

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
DETAIL OF PERMANENT EMPLOYMENT

	1989 Actual	1990 Estimate	1991 Estimate
ES-6	1	1	1
ES-5	4	5	5
ES-4	6	7	7
ES-3	0	1	1
ES-2	2	3	3
ES-1	3	4	4
Subtotal	16	21	21
GS/GM-15	44	50	55
GS/GM-14	186	215	220
GS/GM-13	330	350	355
GS/GM-12	687	710	720
GS/GM-11	885	900	920
GS/GM-10	29	35	37
GS/GM-9	863	875	885
GS/GM-8	138	145	150
GS/GM-7	535	540	550
GS/GM-6	511	520	525
GS/GM-5	1,088	1,090	1,110
GS/GM-4	1,334	1,341	1,360
GS/GM-3	345	350	355
GS/GM-2	10	12	15
Subtotal	6,985	7,133	7,257
Ungraded	2,024	2,031	2,047
Total permanent employment at end of fiscal year	9,025	9,185	9,325

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUDGET JUSTIFICATIONS, F.Y. 1991

March 3, 1849

TERRITORIAL AND INTERNATIONAL AFFAIRS

NOTICE: These budget justifications are prepared for the Interior and Related Agencies Appropriations Subcommittees. Approval for release of the justifications prior to their printing in the public record of the Subcommittee hearings may be obtained through the Office of Budget of the Department of the Interior.

Department of the Interior
Territorial and International Affairs

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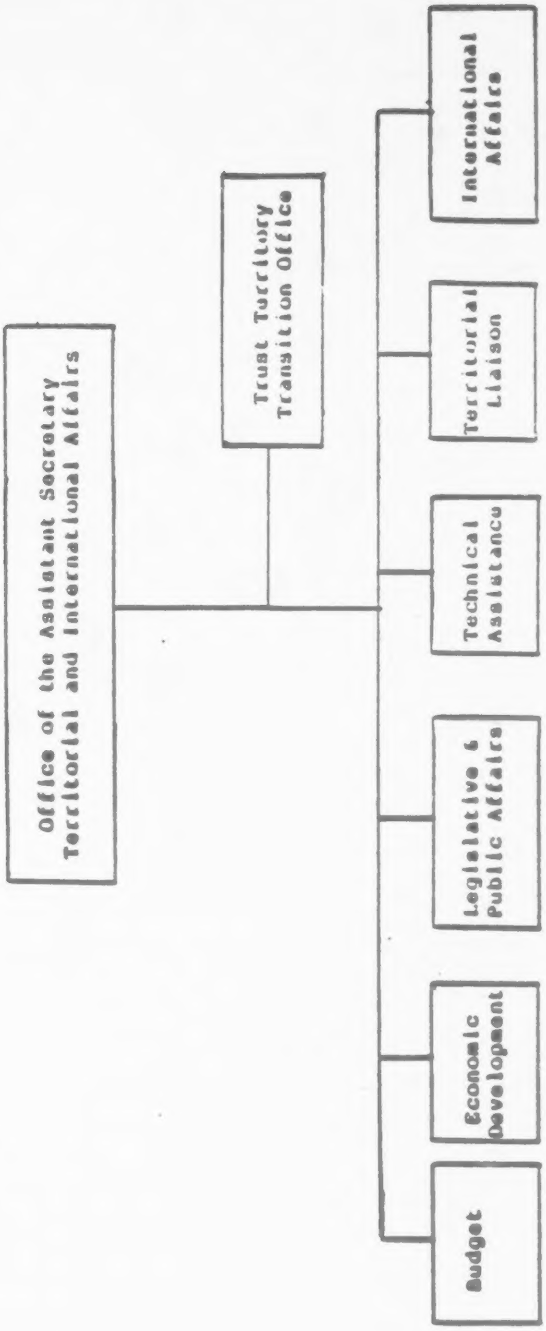
Office of the Assistant Secretary
Territorial and International Affairs
Trust Territory
Transition Office
International
Affairs
Territorial
Liaison
Technical
Assistance
Legislative &
Public Affairs
Economic
Development
Budget

General Statement

The functions and responsibilities of the Secretary of the Interior with regard to the territories of the United States and the freely associated states have been assigned to the Assistant Secretary for Territorial and International Affairs. Although the Congress has placed with the Secretary of the Interior certain authority and responsibility concerning the territorial governments, those governments are not entities of the Department of the Interior, nor are they agencies or instrumentalities of the Federal government.

The broad goals of the Department are to promote the economic, social and political development of the territories, leading each toward greater self-government, and to further international peace and security by conducting territorial affairs in coordination with the defense and foreign policies of the United States. Specific strategies are to promote private sector investment and economic diversification in the territories, to improve territorial government efficiency, and to promote greater fiscal responsibility and accountability within the local governments.

The following summary table for all territorial appropriations provides a comparison between the President's FY 1990 budget estimate and the FY 1991 request:

(Dollar amounts in thousands)

		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Request	Inc. (+) or Dec. (-) from FY 1990 Adjusted Appropriation
Appropriations:					
Administration of Territories	($)	76,489	76,489	71,203	-5,286
	(FTE-T)	(44)	(44)	(49)	(+5)
Trust Territory of the Pacific Islands	($)	33,339	32,927	30,600	-2,327
	(FTE-T)	(—)	(—)	(—)	(—)
Compacts of Free Association	($)	23,260	23,260	19,200	-4,060
	(FTE-T)	(—)	(—)	(—)	(—)
Subtotal, Appropriation	($)	133,088	132,676	121,003	-11,673
	(FTE-T)	(44)	(44)	(49)	(+5)
Permanents and Trusts:					
Payments to U.S. Territories, Fiscal Assistance	($)	70,000	70,000	75,000	+5,000
	(FTE-T)	(—)	(—)	(—)	(—)
Compacts of Free Association	($)	161,238	161,238	148,238	-13,000
	(FTE-T)	(—)	(—)	(—)	(—)
Subtotal, Permanents and Trusts	($)	231,238	231,238	223,238	-8,000
	(FTE-T)	(—)	(—)	(—)	(—)
TOTAL, TERRITORIAL AND INTERNATIONAL AFFAIRS	($)	364,326	363,914	344,241	-19,673
	(FTE-T)	(44)	(44)	(49)	(+5)

Administration of Territories

This appropriation provides direct funding for the administration of territories programs, technical assistance activities, capital improvements and other special programs in Guam, American Samoa, the U.S. Virgin Islands and the Commonwealth of the Northern Mariana Islands. Also included in this account is basic operational support for the governments of American Samoa and the Northern Mariana Islands.

The budget request for operational support for American Samoa remains essentially unchanged from the level of funding that has been provided for the past five years. Despite consistent increases in local revenues in recent years, the American Samoa Government has not been able to control expenditures within available revenues. The budget request is predicated on an assumption that the solution to this financial crisis is not an infusion of significant new financial assistance. Rather, the solution requires greater budget discipline and expenditure control by the local government coupled with continuing growth of the economy.

The budget for operational support for the Northern Mariana Islands is based on the multi-year funding agreement that was signed in July 1985. The schedule of payments under the agreement, along with a pledge of the full faith and credit of the United States was incorporated into law in Public Law 99-396. This "Special Representatives Agreement" calls for decreasing operational support over the years and greater reliance on increasing local revenues generated by economic development.

Funding for capital improvement projects is included for each of the U.S. territories. In the case of the Northern Mariana Islands, funds are requested within the multi-year funding agreement. The primary objective of the capital improvement program is to fund construction of basic infrastructure (i.e. water, sewers, roads and power) where the lack of such infrastructure is a hindrance to further economic development. The capital improvement program also focuses on important non-revenue producing projects of such magnitude that they cannot reasonably be funded through local revenues or financing. Priority is given to projects which improve public safety or the general health and physical welfare of the territorial inhabitants.

Technical Assistance remains a major element of the Department's territorial program. Assistance provided by requested funds will focus on increasing economic development opportunities in the insular areas, as well as improving territorial financial management in response to concerns of the Inspector General regarding inadequate internal controls. Assistance also will be provided to cover a complete range of territorial needs including health care, initiatives to improve government efficiency, and public safety. Assistance will continue to be provided to the freely associated state governments as necessary.

The new "Maintenance Assistance Fund", established last year, will continue to provide assistance to all the insular areas in planning for, training, and implementing procedures for routine maintenance of all capital development projects.

The FY 1991 request includes a new line-item within the Territorial Administration account. A "Drug Interdiction/Abuse Prevention" fund is being created for drug enforcement assistance in the insular areas to help compensate for losses resulting from the reformulation of Federal drug assistance in the FY 1988 Omnibus Drug Act. It will also provide greater flexibility to support regional enforcement initiatives in the vast geographical areas covered by the insular entities.

Trust Territory of the Pacific Islands

Over the years, this appropriation has provided operational support for the Trust Territory government and for the Micronesian governments of the Republic of Palau, the Republic of the Marshall Islands, and the Federated States of Micronesia. Through this appropriation, the U.S. Government has provided over $300 million of capital improvement funds for the construction of a basic infrastructure in the Trust Territory. This account has also provided funding for a number of special programs in the Trust Territory, including supplementary food and health care programs for certain islands and atolls affected by U.S. nuclear weapons testing, and general administrative support programs for all of Micronesia such as the operations and maintenance of capital improvements, satellite communications, and the College of Micronesia.

The 1991 budget estimates are predicated on the assumption that the Palau Compact is not going to be implemented in the near future due to Palau not having ratified the Compact in six plebiscites. Therefore, OTIA is budgeting for continuing support for Palau under the Trust Territory appropria- tion. Consistent with this new assumption, OTIA is requesting an expanded budget for Trust Territory Administration.

The budget also assumes that any new capital improvement projects for the Trust Territory should be funded through the capital account in the Compact budget or through local revenues and private investment. The Department, however, will continue to monitor a number of ongoing capital improvement projects until completion. Through its Operations and Maintenance Improvement Program, the Department will emphasize development of effective operations and maintenance programs and institutions throughout Micronesia.

The FY 1991 request includes a new budget line-item within the Trust Territory of the Pacific Islands account. The "Damage Claims" fund will provide appropriations to fund an agreement to settle a claim against the former Trust Territory Government for damage to the reef in Kosrae during construction of the airport runway.

Finally, the FY 1991 request includes funding to eliminate the balance of the Trust Territory deficit. The proposed funding will fully liquidate existing debts of the former Trust Territory Government.

Compact of Free Association

On January 14, 1986, a Compact of Free Association for the Federated States of Micronesia (FSM) and the Republic of the Marshall Islands (RMI) was enacted as Public Law 99-239. This law is the legislation which approved the Compact and authorized the appropriation of over $2.3 billion in Federal funding for the 15-year duration of the Compact. Public Law 99-349, the Urgent Supplemental Appropriations Act for 1986, appropriated the first of 15 annual payments to the freely associated states, along with all permanent funding for the life of both the FSM/RMI Compact and the Palau Compact. Since the Compact was not implemented until the fall of 1986, these funds were re-appropriated for fiscal year 1987 as part of Public Law 99-500 and Public Law 99-591, the Continuing Resolution for Fiscal Year 1987. Presidential Proclamation 5564, dated November 3, 1986, put the Compact into force as of October 21, 1986 for the RMI, and as of November 3, 1986 for the FSM, and began the first year of payments for both freely associated states. With FY 1987 being the first year of Compact funding for the RMI and the FSM, this budget will provide fifth year funding in FY 1991 for these two Freely Associated States.

The Republic of Palau Compact was enacted on November 14, 1986 (Public Law 99-658). That Compact also provides for annual payments over 15 years (totalling over $420 million), although the duration of the agreement is fifty years. At this writing, the Palau Compact implementation legislation has been approved by the Congress (P.L. 101-219), subject to Palau's ability, through public referendum, to resolve a conflict between the Compact and their Constitution. At this time, the budget estimates for FY 1991 are predicated on the assumption that the Palau Compact is not going to be implemented in the near future, since Palau has not been able to ratify the Compact in six attempts.

However, the budget estimates do include funding for certain projects and programs in Palau mandated by P.L. 101-219. This funding for construction of a jail; support for drug enforcement, a special prosecutor and a public auditor is contingent on the implementation of the Palau Compact.

Payments to the U.S. Territories, Fiscal Assistance

This permanent-indefinite appropriation provides the mechanism for the return to Guam and the U.S. Virgin Islands of certain tax revenues collected by the U.S. Treasury. For the Virgin Islands, these are excise taxes, collected on the export of rum; and for Guam, these are primarily income taxes of mainland personnel living on Guam, including military retirees and dependents.

Each year, Guam and the Virgin Islands estimate tax collections for the upcoming fiscal year and are given an advance payment based on that estimate. Once actual tax collection figures are available from the U.S. Treasury, an adjustment is made to correct any over or under payment that was made in the advance. Figures included in the budget are only preliminary estimates of those advances and do not restrict in any way the final estimates developed by the governments or the amount of the advance payments.

Authorization

(1) Guam. Executive Order 10077, dated September 7, 1949, transferred the administration of the Island of Guam from the Secretary of the Navy to the Secretary of the Interior. Executive Order 10137, of June 30, 1950, amended Executive Order 10077 to make the transfer effective on July 1, 1950. The Guam Organic Act was approved on August 1, 1950 (64 Stat. 384, 48 U.S.C. Sec. 1421 et. seq.) and declared Guam to be an unincorporated territory of the United States and provided that Guam's relationship with the Federal Government shall be under the general administrative supervision of the Secretary of the Interior. As a result of subsequent amendments to the Organic Act, Guam also elects its Governor and a Delegate to the United States Congress.

Additional authorization is required for Guam construction grants in FY 1991.

(2) American Samoa. In 1900, the islands were placed under the administration of the Secretary of the Navy by Executive Order. In the Act of February 20, 1929 (48 U.S.C. 1661), Congress stated that until it shall provide for the Government of the islands of American Samoa, "all civil, judicial, and military powers shall be vested in such manner as the President of the United States shall direct." The President vested these powers in the Secretary of the Interior by Executive Order 10264, dated June 29, 1951. Secretary's Order No. 2657, dated August 29, 1951, set forth the extent and nature of the authority of the Government of American Samoa and the manner in which the authority is to be exercised. Secretarial Order 3009 dated September 24, 1977, provided for an elected Governor and Lt. Governor for American Samoa, and elected officials first took office on January 3, 1978. Pursuant to Public Law 95-556, American Samoa, in November 1980, elected its first Delegate to the United States Congress.

(3) U.S. Virgin Islands. The islands were under the jurisdiction of the Navy Department from March 21, 1917, until March 18, 1931 (48 U.S.C. 1391), when the government was placed under the supervision of the Secretary of the Interior pursuant to Executive Order 5566, dated February 27, 1931. Organic legislation was first passed in 1936 (49 Stat. 1812), and was revised by Public Law 83-517, effective July 22, 1954 (48 U.S.C. et. seq.). The latter has since been amended in various respects and the Virgin Islands' elected officials first took office on January 3, 1978. Additional authorization for prison expansion in the Virgin Islands is provided in Section 207 of Public Law 101-219.

(4) Northern Mariana Islands. On March 24, 1976, the President signed a joint resolution of Congress approving the "Covenant to Establish a Commonwealth of the Northern Mariana Islands in Political Union with the United States of America" (Public Law 94-241). The islands remained a part of the Trust Territory of the Pacific Islands under the jurisdiction of the Secretary of the Interior pursuant to Executive Order 11021 of May 7, 1962. Secretarial Order 2989, dated March 14, 1976, and effective January 9, 1978, provided for the separate administration of the Northern Mariana Islands, provided for the elected Government in the Northern Mariana Islands, and activated various sections of the Covenant. By Presidential Proclamation of November 3, 1986, and as a result of a valid act of self-determination pursuant to Section 1002 of the Covenant, the

Northern Mariana Islands ceased to be bound by the United Nations Trusteeship Agreement of 1947, and elected to become a commonwealth in political union and under the sovereignty of the United States.

(5) Office of Territorial and International Affairs. Established February 14, 1980, by Secretarial Order No. 3046.

(6) Trust Territory of the Pacific Islands. Under the terms of the Trusteeship Agreement between the United States and the Security Council of the United Nations, entered into on July 28, 1947 (61 Stat. 397), the United States exercises full jurisdiction over the Trust Territory of the Pacific Islands and is obligated to promote the political, economic, and educational advancement of the inhabitants. The act of June 30, 1954 (68 Stat. 330), as amended, and Executive Order 11021 of May 7, 1962, provide the basis for administration of the Trust Territory. Political development and increasing self-government were recognized by Secretarial Order No. 3039, "Recognition of Government Entities Under Locally-Ratified Constitution in the Trust Territory of the Pacific Islands." The constitution of the Marshall Islands went into effect on May 1, 1979; that of the Federated States of Micronesia on May 10, 1979; and the constitution of Palau on January 1, 1981. By Presidential Proclamation of November 3, 1986, and pursuant to Sections 101 and 102 of the Joint Resolution to approve a Compact of Free Association (P.L. 99-239), the 1947 United Nations Trusteeship Agreement ceased to apply to the Republic of the Marshall Islands and the Federated States of Micronesia as those two Micronesian states entered into a relationship of free association with the United States. Secretarial Order 3119 provides the basis for continuing administration of the Republic of Palau until such time as their Compact of Free Association comes into effect.

(7) Compact of Free Association. The Compact was enacted in January 1986 (P.L. 99-239) and authorizes funding over a fifteen-year period for the Federated States of Micronesia and the Republic of the Marshall Islands. Section 105(b)(2) of the Compact provides that "Appropriations made pursuant to the Compact or any other provision of this joint resolution may be made only to the Secretary of the Interior, who shall coordinate and monitor any program or activity provided to the Federated States of Micronesia or the Republic of the Marshall Islands by departments and agencies of the Government of the United States and related economic development planning pursuant to the Compact or pursuant to any other authorization except for the provisions of sections 161(e), 313, and 351 of the Compact and the authorization of the President to agree to an effective date pursuant to this resolution. Funds appropriated to the Secretary of the Interior pursuant to this paragraph shall not be allocated to other Departments or agencies." The Compact of Free Association for the Republic of Palau was enacted on November 14, 1986 as P.L. 99-658, and approved for implementation in Public Law 101-219, contingent on successful resolution by Palau of the conflict of the Compact with the Palau constitution.

These basic legal authorities have been supplemented and modified over the years by various omnibus territory bills and other special legislation.

DEPARTMENT OF THE INTERIOR

BUDGET ACCOUNTS TABLE

Bureau: Territorial and International Affairs

Budget Authority and Outlays (in thousands of dollars)

Account and Functional Code	Budget Authority					Outlays				
	1989 Actual	1990 Enacted	1990 P.L. 99-177 Reduction Amount	1990 Adjusted Appropriation Amount	1991 Estimate	1989 Actual	1990 Enacted	1990 P.L. 99-177 Reduction Amount	1990 Adjusted Estimate	1991 Estimate
Federal Funds										
General and Special Fund Appropriations:										
Administration of Territories (14-0412-0-1-806)	92,767	76,489	-0-	76,489	71,203	69,996	84,290	-0-	84,290	68,830
Trust Territory of the Pacific Islands (14-0414-0-1-806)	28,434	33,339	-412	32,927	30,600	46,379	33,949	-367	33,582	31,212
Compact of Free Association (14-0415-0-1-806)	32,360	23,260	-0-	23,260	19,200	32,360	40,201	-0-	40,201	17,700
Permanent, General, and Special Fund Appropriations:										
Payments to U.S. Territories Fiscal Assistance (14-0418-0-0-852)	79,790	70,000	-0-	70,000	75,000	70,000	70,000	-0-	70,000	75,000
Compact of Free Association (14-0415-0-1-806)	80,820 1/	161,238	-0-	161,238	148,238	152,763	161,238	-0-	161,238	148,238
Total, Federal Funds	314,171	364,326	-412	363,914	344,241	365,738	389,678	-367	389,311	340,980

1/ Reflects actual permanent budget authority appropriated in FY 1989. Actual obligations of permanent funds totalled $125,378,000 due to excess warrant authority available from prior years.

Appropriation Summary Statement

Territorial and International Affairs

Appropriation: Administration of Territories

The FY 1991 request for the Administration of Territories appropriation is $71,203,000 a decrease of $5,286,000 and an increase of 5 FTEs from the FY 1990 estimate. This appropriation provides basic operational support for the Office of Territorial and International Affairs and for the U.S. territories of American Samoa and the Commonwealth of the Northern Mariana Islands. Also included in this appropriation are construction grants to improve the U.S. territorial infrastructures and other special programs to provide special assistance to the territories not available through normal Federal programs and services.

Major activities funded by this appropriation are:

1. Guam. The base budget has been adjusted downward to reflect funding in FY 1990 of $500,000 for the Drug Interdiction/Abuse Prevention Program. A total of $2,500,000 in Construction Grant funding is being proposed for FY 1991. This request is to complete the renovation and expansion of the Guam Memorial Hospital.

2. American Samoa. The base budget has been decreased by $5,875,000 to reflect funding in FY 1990 of $5,525,000 for capital improvement projects and $350,000 for Drug Interdiction/Abuse Prevention. A total of $21,000,000 is requested for government operations in FY 1991, an increase of $150,000. An increase of $1,000,000 is requested for FY 1991 for additional school classrooms and school buses.

3. U.S. Virgin Islands. The base budget has been reduced by $1,000,000 to reflect funding in FY 1990 for the expansion of the Golden Grove prison located on St. Croix. An additional $3,000,000 is requested in FY 1991 for completing further expansion of prison facilities.

4. Commonwealth of the Northern Mariana Islands. Budget authority of $28,850,000 is requested for FY 1991 pursuant to the Special Representatives Agreement under the Northern Marianas' Covenant. The planned net decrease of $5,000,000 from FY 1990 is consistent with the seven-year schedule of payments in the Special Representatives Agreement, and the entire FY 1991 payment is guaranteed with the full faith and credit of the United States.

5. Territorial Administration. Total budget authority of $14,853,000 is requested for FY 1991, an increase of $548,000 over the FY 1991 base. This increase will cover five additional FTEs, three of which are for field representation in the Freely Associated States and Palau, and two are for the Office of Territorial and International Affairs. This increase is critical to the improvement of internal controls in the administration of territorial programs and to creating a Federal presence in Palau and the freely associated states.

An increase of $500,000 over the FY 1991 base, or a total of $6,385,000, is proposed for FY 1991 for the Technical Assistance program. This includes $710,000 for continuation of the Close-Up Foundation programs in the insular areas that began in FY 1988, and funding to provide assistance to Guam and the Northern Mariana Islands to offset the socio-economic impact of Micronesian migration to these islands following implementation of the Compact of Free Association. The Technical Assistance program has been successful and vital to maintaining good relationships with all of the insular areas.

The proposed budget for the Maintenance Assistance fund is decreased by $500,000 over the FY 1991 base to more properly time new budget authority with the receipt of the Baseline Evaluation of infrastructure operations and maintenance in the insular areas. This fund is an essential element of the Operations and Maintenance Improvement Program instituted jointly in FY 1989 by the Department of the Interior and the U.S. Army Corps of Engineers.

The Department is proposing a $1,000,000 increase to help offset funds lost by the insular areas due to reformulation of drug enforcement assistance resulting from enactment of the Omnibus Drug Act of 1988. This proposed increase is included in a new budget line-item entitled "Drug Interdiction/Abuse Prevention", and will be used to provide centrally-managed funding for regional efforts to reduce drug transhipment and to enhance drug interdiction and abuse prevention programs in the insular areas.

Finally, we are proposing $1,387,000 for the interest rate subsidy, to be paid to the Federal Financing Bank according to the terms of a 1984 refinancing of a $36 million loan to the Guam Power Authority. A negative base adjustment of $71,000 has been made to agree with the pre-determined schedule of payments.

Appropriation Language Sheet

DEPARTMENT OF THE INTERIOR
TERRITORIAL AND INTERNATIONAL AFFAIRS

ADMINISTRATION OF TERRITORIES

For expenses necessary for the administration of territories under the jurisdiction of the Department of the Interior, [$76,489,000] $71,203,000, of which (1) [$73,543,000] $67,622,000 shall be available until expended for technical assistance; maintenance assistance; drug interdiction and abuse prevention; late charges and payments of the annual interest rate differential required by the Federal Financing Bank, under terms of the second refinancing of an existing loan to the Guam Power Authority, as authorized by law (Public Law 98-454; 98 Stat. 1732); grants to the judiciary in American Samoa for compensation and expenses, as authorized by law (48 U.S.C. 1661(c)); grants to the Government of American Samoa, in addition to current local revenues, for construction and support of governmental functions; [construction] grants to the Government of the Virgin Islands as authorized by law [Public Law 97-357 (96 Stat. 1709)] (Public Law 101-219); grants [and construction grants] to the Government of Guam, as authorized by law [(Public Law 98-454; 98 Stat. 1732)]; grants to the Government of the Northern Mariana Islands as authorized by law (Public Law 94-241; 90 Stat. 272); and (2) [$2,946,000] $3,581,000 for salaries and expenses of the Office of Territorial and International Affairs, of which not to exceed $3,000 may be used for official reception and representation expenses: Provided, That the territorial and local governments herein provided for are authorized to make purchases through the General Services Administration: Provided further, That all financial transactions of the territorial and local governments herein provided for, including such transactions of all agencies or instrumentalities established or utilized by such governments, shall be audited by the General Accounting Office, in accordance with Chapter 35 of title 31, United States Code: Provided further, That Northern Mariana Islands Covenant grant funding shall be provided according to those terms of the Agreement of the Special Representatives on Future United States Financial Assistance for the Northern Mariana Islands approved by Public Law 99-396, except that should the Secretary of the Interior believe that the performance standards of such agreement are not being met, operations funds may be withheld, but only by Act of Congress as required by Public Law 99-396; Provided further, That [$935,000 of the amounts provided for technical assistance shall be available for a grant to the Close Up Foundation; Provided further, That] the funds for the program of operation and maintenance improvement are appropriated to institutionalize routine operations and maintenance of capital infrastructure in American Samoa, Guam, the Virgin Islands, the Commonwealth of the Northern Mariana Islands, the Republic of Palau, the Republic of the Marshall Islands, and the Federated States of Micronesia through assessments of long-range operations and maintenance needs, improved capability of local operations and maintenance institutions and agencies (including management and vocational education training), and project-specific maintenance (with territorial participation and cost sharing to be determined by the Secretary based on the individual territory's commitment to timely maintenance of its capital assets). (Department of the Interior and Related Agencies Appropriations Act, 1990.)

Justification of Proposed Language Changes

Administration of Territories

1. Addition: "... drug interdiction and abuse prevention..."

   This language adds a new grant program proposed for FY 1991 under the Territorial Administration account, as authorized in Public Law 100-690.

2. Addition: "... of which not to exceed $3,000 may be used for official reception and representation expenses..."

   OTIA places a high priority on this language and has had such authority in the past. It does not increase the size of the budget, but authorizes the use of $3,000 within available funds. Rather, it recognizes the unique nature of the responsibilities of the Assistant Secretary for Territorial and International Affairs, who on a routine basis, deals with foreign and domestic heads of government. All of these heads of government have similar authority and routinely officially greet the Assistant Secretary and other Federal officials when they travel to the islands. It is a commonly accepted government practice and, more importantly, it is basic and fundamental to island cultures. The availability of such a fund would be particularly useful during certain times of the year (Congressional hearings, National Governors' Conference, and special conferences) when all or many of the island leaders come together.

Appropriation Language Citations

Territorial and International Affairs

Appropriation: Administration of Territories

1. For technical assistance;

   48 U.S.C. 1469(a)

   48 U.S.C. 1469(a) provides that "The Secretary of the Interior is authorized to extend to the governments of American Samoa, Guam, the Northern Mariana Islands, the Virgin Islands, and the Trust Territory of the Pacific Islands, and their agencies and instrumentalities, with or without reimbursement, technical assistance on subjects within the responsibility of the respective territorial governments. Such assistance may be provided by the Secretary of the Interior through members of his staff, reimbursements to other departments or agencies of the Federal Government under the Economy Act (31 U.S.C. 686), grants to or cooperative agreements with such governments, agreements with Federal agencies or agencies of State or local governments, or the employment of private individuals, partnerships, or corporations. Technical Assistance may include research, planning assistance, studies, and demonstration projects."

2. Late charges and payments of the annual interest rate differential required by the Federal Financing Bank, under terms of the second refinancing of an existing loan to the Guam Power Authority,

   P.L. 98-454; 98 Stat. 1732, 48 U.S.C. 1423a

   Section 203 of Public Law 98-454 provides authorization for the Secretary of the Interior to pay the difference between the seven percent to be paid by GPA and the full rate determined at the time of the second refinancing of the GPA debt.

3. Grants to the judiciary in American Samoa for compensation and expenses, as authorized by law; grants to the Government of American Samoa, in addition to current local revenues, for support of governmental functions;

   48 U.S.C. 1661(c)

   48 U.S.C. 1661(c) provides that "Until Congress shall provide for the government of such islands, all civil, judicial, and military powers shall be vested in such person or persons and shall be exercised in such manner as the President of the United States shall direct;".

4. Construction grants to the Government of the United States Virgin Islands,

   P.L. 101-219.

   Section 207 of Title II of Public Law 101-219 provides that "There is authorized to be appropriated $5,000,000 to the Secretary of the Interior for the Golden Grove Prison on St. Croix, United States Virgin Islands, and for renovation of and improvements of existing prison facilities."

5. Construction grants to the Government of Guam

   Additional authorization is required for construction grants to Guam in FY 1991 or future years.

6. Grants to the Government of the Northern Mariana as authorized by law;

   P.L. 94-241 (90 Stat. 272), 48 U.S.C. 1681 (note).

   Section 3 of Public Law 99-396 enacted August 27, 1986 provides "for the payment of $228 million ...for the Government of the Northern Mariana Islands ... (to) be provided according to the schedule of payments contained in the Agreement of the Special Representatives..."

7. $3,581,000 for fiscal year 1991 for salaries and expenses of the Office of Territorial and International Affairs: Provided, That the Territorial and local governments herein provided for are authorized to make purchases through the General Services Administration: Provided further, that all financial transactions of the territorial and local governments herein provided for, including such transactions of all agencies or instrumentalities established or utilized by such governments, shall be audited by the General Accounting Office, in accordance with Chapter 35 of Title 31 United States Code.

   Chapter 35 of Title 31, U.S.C. provides that all financial transactions of the territorial and local governments, including such transactions of all agencies or instrumentalities established or utilized by such governments, will be audited by the General Accounting Office in accordance with the provisions of the Budget and Accounting Act, 1921 (42 Stat. 23), as amended [3 U.S.C.A. et seq.], and the Accounting and Auditing Act of 1950 (64 Stat. 834) [31 U.S.C.A. 65 et seq.].

APPROPRIATION: ADMINISTRATION OF TERRITORIES:

Summary of Requirements

($ in thousands)

	FTE-T	Amount	FTE-T	Amount
Appropriation enacted, 1990			44	76,489
Reduction pursuant to P.L. 99-177			0	0
Adjusted Appropriation, 1990			44	76,489
Adjustments to Base:				
Additional Cost in 1991 for the 1991 Pay Raise	0	+64		
Adjustment for Rental Payments to GSA	0	+20		
Adjustment for CSRS/FERS Retirement Cost	0	+15		
Adjustment for Departmental Working Capital Fund	0	-22		
Adjustment for One Additional Paid Day in FY 1991	0	+10		
Other Increases and/or Decreases:				
Adjustment in Interest Rate Subsidy for the Guam Power Authority Loan with the Federal Financing Bank	0	-71		
Adjustment for Funding of Prior Year Construction and/or Special Program Grants:				
— Guam Special Program Grants	0	-500		
— American Samoa Construction	0	-5,525		
— American Samoa Special Program Grants	0	-350		
— Northern Mariana Islands Special Program Grants	0	-125		
— Virgin Islands Construction	0	-1,000		
Net, Other Increases and/or Decreases			0	-7,571
Total, Adjustments to Base			0	-7,484
1991 Base Budget			44	69,005
Program Changes (Changes to base budget, detailed below)			+5	+2,198
Total Requirements (1991 Estimate)			49	71,203

Comparison by Activity/Subactivity

	1989 Actual		1990 Enacted to Date		P.L. 99-177 Reduction	1990 Adjusted Appropriation	1991 Base		1991 Estimate		Increase (+) or Decrease (-) from 1990 Appropriation		Increase (+) or Decrease (-) from 1990 Adjusted Appropriation	Increase (+) or Decrease (-) from 1991 Base	
	FTE-T	Amount	FTE-T	Amount	Amount	Amount	FTE-T	Amount	FTE-T	Amount	FTE-T	Amount		FTE-T	Amount
1. Guam:															
(a) Construction grants		4,900		—	—	—		—		2,500		+2,500	+2,500		+2,500
(b) Special program grants		—		500	—	500		—		—		-500	-500		—
Subtotal	—	4,900	—	500	—	500	—	—	—	2,500	—	+2,000	+2,000	—	+2,500
2. American Samoa:															
(a) Operations grants	3	20,776	3	20,850	—	20,850	3	20,850	3	21,000		+ 150	+150		+ 150
(b) Construction grants		2,900		5,525	—	5,525		—		1,000		-4,525	-4,525		+1,000
(c) Special program grants		—		350	—	350		—		—		-350	-350		—
Subtotal	3	23,676	3	26,725	—	26,725	3	20,850	3	22,000	—	-4,725	-4,725	—	+1,150
3. Virgin Islands:															
(a) Construction grants		2,600		1,000	—	1,000		—		3,000		+2,000	+2,000		+3,000
(b) Special program grants		1,500		—	—	—		—		—		—	—		—
Subtotal	—	4,100	—	1,000	—	1,000	—	—	—	3,000	—	+2,000	+2,000	—	+3,000
4. Northern Mariana Islands:															
(a) Covenant		40,150		33,850	—	33,850		33,850		28,850		-5,000	-5,000		-5,000
(b) Other construction grants		10,000		—	—	—		—		—		—	—		—
(c) Special Program Grants		—		125	—	125		—		—		-125	-125		—
Subtotal	—	50,150	—	33,975	—	33,975	—	33,850	—	28,850	—	-5,125	-5,125	—	-5,000
5. Territorial Administration:															
(a) Office of Territorial & International Affairs	41	3,026	41	2,946	—	2,946	41	3,033	46	3,581	+5	+635	+635	+5	+548
(b) Technical Assistance		5,410		5,885	—	5,885		5,885		6,385		+500	+500		+500
(c) Guam Power Authority Loan Assistance		1,505		1,458	—	1,458		1,387		1,387		-71	-71		—
(d) Maintenance Assistance Fund		—		3,000	—	3,000		3,000		2,500		-500	-500		-500
(e) Brown Tree Snake		—		1,000	—	1,000		1,000		—		-1,000	-1,000		-1,000
(f) Drug Interdiction/Abuse Prevention		—		—	—	—		—		1,000		+1,000	+1,000		+1,000
Subtotal	41	9,941	41	14,289	—	14,289	41	14,305	46	14,853	+5	+564	+564	+5	+548
TOTAL REQUIREMENTS	44	92,767	44	76,489	—	76,489	44	69,005	49	71,203	+5	-5,206	-5,206	+5	+2,198

Justification of Base Adjustments

Administration of Territories

	FTE	Amount ($000)
Additional Cost in 1991 of the 1991 Pay Raise...	—	+$ 64
The adjustment is for the additional amount needed in 1991 to cover 40 percent of the additional three quarter's cost of the estimated 3.5 percent pay raise effective in January 1991. This entire amount is for the general schedule pay. The 1991 cost of the remaining 60 percent will be absorbed in FY 1991.		
Rental Payments to GSA..........................	—	+$ 20
The adjustment is for increased costs payable to GSA resulting from higher rates for existing office and non-office space.		
CSRS/FERS Retirement Costs.....................	—	+$ 15
The adjustment is for the increase in estimated retirement costs resulting from the continuing growth in the relative proportion of FERS employees in the Office of Territorial and International Affairs work force.		
Departmental Working Capital Fund...............	—	-$ 22
The adjustment is for decreased costs assigned to the Office of Territorial and International Affairs for administrative services provided on a Department-wide basis. In FY 1991, costs for the Washington Interagency Telecommunications Systems (WITS), the GSA - provided computerized telephone systems for the Interior Complex and the Department's in-house data interface/transport system, will decrease. Major acquisition and start-up costs for WITS will occur in FY 1990, with reduced costs in 1991 related primarily to maintenance. This reduction will be partially offset by adjustments for safety management and printing.		
One Additional Paid Day in FY 1991..............	—	+$ 10
The increase in personnel compensation results from there being one more paid work day in FY 1991 than in FY 1990.		

Justification of Base Adjustments Continued

Administration of Territories

FTE Amount ($000)

One-time decreases for prior-year funding of construction and/or special program grants:

Guam Power Authority Loan Assistance............. -$ 71

The adjustment reflects the scheduled reduction in the interest payment subsidy which the Department provides to the Federal Financing Bank for its 1984 refinancing of a loan to the Guam Power Authority.

Guam Special Programs Grants..................... -$ 500

The adjustment reflects funding received for FY 1990 for Drug Interdiction and Abuse Prevention ($500).

American Samoa Construction...................... -$5,525

The adjustment reflects funding appropriated for FY 1990 for (1) Masefau Water System ($390); (2) Aunu'u Water System ($260); (3) Tafuna Storage Tank ($1,400); (4) Oil Tank Farm repairs ($2,000); (5) Court House renovation/construction ($750); and (6) Community Centers/Gymnasiums Construction ($725).

American Samoa Special Programs Grants........... -$ 350

This adjustment reflects funding appropriated for FY 1990 for Drug Interdiction and Abuse Prevention.

Northern Mariana Islands Special Programs........ -$ 125

This adjustment reflects funding appropriated for FY 1990 for Drug Interdiction and Abuse Prevention.

U.S. Virgin Islands Construction................. -$1,000

The adjustment reflects funding appropriated for FY 1990 for expansion of the Golden Grove prison on St. Croix.

Activity Summary

Appropriation: Administration of Territories

(dollar amounts in thousands)

Activity		FY 1989 Actual	FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from Base
Guam	($)	4,900	500	500	—	2,500	+2,500
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
American Samoa	($)	23,676	26,725	26,725	20,850	22,000	+1,150
	(FTE-T)	(3)	(3)	(3)	(3)	(3)	(—)
Virgin Islands	($)	4,100	1,000	1,000	—	3,000	+3,000
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Northern Mariana Islands	($)	50,150	33,975	33,975	33,850	28,850	-5,000
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Territorial Administration	($)	9,941	14,289	14,289	14,305	14,853	+ 548
	(FTE-T)	(41)	(41)	(41)	(41)	(46)	(+5)
Total	($)	92,767	76,489	76,489	69,005	71,203	+2,198
	(FTE-T)	(44)	(44)	(44)	(44)	(49)	(+5)

Justification of Program and Performance

Activity: Guam

(dollar amounts in thousands)

Subactivity		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from Base
Construction Grants	($) (FTE-T)	— (—)	— (—)	— (—)	2,500 (—)	+2,500 (—)
Special Program Grants	($) (FTE-T)	500 (—)	500 (—)	— (—)	— (—)	— (—)
Total Requirements	($) (FTE-T)	500 (—)	500 (—)	— (—)	2,500 (—)	+2,500 (—)

Although the Government of Guam has made significant progress economically, it still is not able to provide for capital improvements or special needs without some Federal assistance. The objective is for Guam to achieve economic self-sufficiency through a broadening of the local tax-base and improved government efficiency. Until such time, the Department will continue to support, within strict budget constraints, limited grant assistance for (1) special projects where the lack of funding poses an immediate threat to the health and safety of the people of Guam; or neighboring islands; and (2) infrastructure improvements where the poor condition of the infrastructure, or the lack of infrastructure, is a hindrance to economic growth or poses a threat to health and safety.

For the FY 1991 budget, the Department is proposing $2,500,000 in construction grant funding for the renovation and expansion of the Guam Memorial Hospital in order to regain accreditation. The initial federal funds provided for the project ($5.6 million) were awarded in 1985 while the design plans and construction activities were not completed and implemented until 1987. Thus, there was an inflation impact. However, there are a number of other factors that have had a legitimate impact on the project causing major cost increases that could not have been foreseen. Structural analysis of the existing facility revealed that expansion was not possible without reinforcing the existing building structure. Since the 1983 citations which led to the hospital's loss of accreditation, the Joint Committee on Accreditation of Health Care Organizations (JCAHCO) standards and code requirements have been substantially updated and revised. New facility deficiencies cited by JCAHCO have been identified for correction, further increasing the original cost estimates. Additionally, the lack of detailed facility "as-built" plans has resulted in numerous changes due to discoveries of interior features which have required changes to the original design plans. Finally, the enormous increase in construction projects on Guam in the last two years has led to shortages of material and supplies to complete projects on time, and has resulted in government projects being bypassed in favor of private sector contracts. This weakens the environment for competitive pricing. Guam has appropriated $15.5 million in local funds towards the hospital renovation. This is a clear indication that the Government of Guam is committed to this effort. Unfortunately, the infusion of these local funds is not sufficient to fund all remaining projects necessary to regain accreditation. Even with reprogramming possibilities and additional local funding sources that are being considered, there remains a critical need for additional federal funds. The $2,500,000 the Department proposes for FY 1991 will greatly assist the hospital toward completing its efforts to improve the services and quality of care rendered, and to meet all national standards for the provision of care in a safe and healthy environment.

To adequately resolve all of the socioeconomic problems on Guam will take time, additional resources, and close coordination and involvement between the Government of Guam, technical experts, and the Federal Government. The Department will continue to focus its attention on working with the Government of Guam to identify and develop new sources of funding, both internally and through the private sector for these types of programs. With regard to capital development projects, the Department will continue to emphasize the establishment of rational rate structures and user fees that will fully recover the cost of services.

Justification of Program and Performance

Activity: Guam
Subactivity: Construction Grants

(dollar amounts in thousands)

		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from 1990	Inc. (+) Dec. (-) from base
Construction Grants	($)	—	—	—	2,500	+2,500	+2,500
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)

Impact of Public Law 99-177

		1990 Enacted to Date	P.L. 99-177 B.A. Reduction	1990 Adjusted Appropriation
Construction Grants	($)	—	—	—
	(FTE-T)	(—)	(—)	(—)

Because the 1990 enacted appropriation level was within the Gramm-Rudman-Hollings Baseline Target, there is no B.A. reduction and, hence, no impact of the provisions of P.L. 99-177.

Authorization Additional authorization is required.

Objectives To provide funding assistance for capital improvements which will enhance revenue collection, economic development, or public safety in Guam.

Base Program

The base program for construction activity in Guam involves working with the Government of Guam to identify critical infrastructure needs and to find funding to meet those needs. Ad hoc construction grants through the Department of the Interior are but one limited option that is considered. Other options include a capital improvement program funded by local revenues, other Federal grant programs, capitalization and ownership by the private sector, private and governmental loans or loan guarantees, and various combinations of the above. As the Government of Guam moves toward greater self-sufficiency and improves its financial condition, these other options will become much more viable.

The program also includes performing necessary functions of a grantor agency. These include monitoring the progress of ongoing construction activity, ensuring the use of competitive processes in the solicitation and award of contracts, ensuring sound financial controls and reporting, and working with the local government to correct identified deficiencies.

Increase for FY 1991

(dollars in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
($)	—	2,500	+2,500
(FTE-T)	(—)	(—)	(—)

The proposed increase is for a grant to the Government of Guam to fund renovation and expansion of the Guam Memorial Hospital to meet national accreditation standards.

Distribution of Change by Object Class	Amount
Grants, subsidies and contributions	+$2,500,000

Justification for Construction

Activity: Guam
Subactivity: Construction Grants

Projects	Total Estimated Cost	Total BA through FY 1990	FY 1991 Request
Hospital Improvements	$24,000,000	$5,792,653*	$2,500,000

* $182,653 was returned to DOI by the Government of Guam after being disallowed in an audit of the 1983 Northern Area Health Center grant project. These funds were administratively reprogrammed to the Hospital project.

Statement of Need

In 1983, the Joint Commission on Accreditation of Health Care Organizations (JCAHCO) revoked accreditation of the Guam Memorial Hospital due to numerous building and life safety code violations, and several patient care and administrative policy deficiencies. Using previously appropriated federal and local funds, Guam has implemented projects addressing the immediate correction of physical plant deficiencies, the correction of life safety code deficiencies, the procurement of temporary administrative offices and has recently awarded the contract for the major renovation and facility expansion construction. However, in order to complete the entire project, additional funding is needed for the remaining renovation projects necessary to expand the hospital facility in order to meet anticipated future needs. Until these projects are completed, the hospital cannot apply for and obtain facility accreditation. JCAHCO survey practices require full occupancy of the facility prior to survey, and do not provide for consideration of planned improvements or construction.

Description

The proposed project is for the construction and renovation of additional hospital facility areas to consolidate services and rectify cited deficiencies which led to loss of accreditation. This effort covers the remodeling and expansion of the intensive care unit, emergency room and surgical suites.

Benefits

This construction and renovation will enable the Guam Memorial Hospital Authority to provide integrated acute care services, on a single campus, in a safe physical plant environment that affords opportunity for the provision of quality care and services in accordance with national standards.

Cost of Completion

A. Cost Categories:

Design (other funding already identified)........	---
Construction	$2,500,000
Total..................................	$2,500,000

B. Source of Funds:

The cost of this project will be funded jointly by this proposed FY 1991 construction grant from the Department of the Interior, and $15 million from the Government of Guam. The Government of Guam will also be responsible for all costs related to operation and maintenance after completion of construction.

Justification of Program and Performance

Activity: American Samoa

(dollar amounts in thousands)

Subactivity		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from 1990	Inc. (+) Dec. (-) from base
Operations Grants	($)	20,850	20,850	20,850	21,000	+150	+150
	(FTE-T)	(3)	(3)	(3)	(3)	(—)	(—)
Construction Grants	($)	5,525	5,525	—	1,000	-4,525	+1,000
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Special Program Grants	($)	350	350	—	—	-350	—
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Total Requirements	($)	26,725	26,725	20,850	22,000	-4,725	+1,150
	(FTE-T)	(3)	(3)	(3)	(3)	(—)	(—)

Each fiscal year, the Department provides grant funds to American Samoa for the operation of the local government, including the judiciary, and for capital improvement projects.

The American Samoa Government does not have sufficient local revenues to fund the general operating costs of its government. Thus, there is a need for Federal support to maintain essential services. OTIA, over the past several years, has provided a constant level of support of approximately $21 million. This places an onus on the local government to find sufficient revenues to cover inflationary costs and increased program needs, caused by population increases and other factors. The financial condition of the local government has been exacerbated in recent years by poor budget discipline, resulting in an inability to adequately control expenditures. The government has stayed afloat primarily due to unanticipated tax windfalls from the tuna canneries; although the original intent was to use these windfalls to create a special Economic Stabilization Fund to protect against future reductions in revenues caused by market changes in the tuna industry, plant closings, etc.

A recent audit report by the Department's Office of the Inspector General has pointed out that local revenues have been consistently underestimated, undermining the basis on which Federal financial support is determined. In response to the audit recommendations, OTIA has agreed that as we receive information from the American Samoa Government, we will keep OMB and Congress informed on the variances between revenue estimates and between actual collections and the estimates.

The financial condition of the American Samoa Government has also virtually precluded any availability of local funding for capital improvements. Thus, we are requesting funding for basic infrastructure needs, but will continue to press for more rational rate structures and user fees.

Justification of Program and Performance

Activity: American Samoa
Subactivity: Operations Grants

(dollar amounts in thousands)

Program		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from 1990	Inc. (+) Dec. (-) from base
General Operations	($)	20,154	20,154	20,154	20,250	+96	+96
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
High Court	($)	696	696	696	750	+54	+54
	(FTE-T)	(3)	(3)	(3)	(3)	(—)	(—)
Total Requirements	($)	20,850	20,850	20,850	21,000	+150	+150
	(FTE-T)	(3)	(3)	(3)	(3)	(—)	(—)

Impact of Public Law 99-177

		1990 Enacted to Date	P.L. 99-177 B.A. Reduction	1990 Adjusted Appropriation
Operations Grants	($)	20,850	—	20,850
	(FTE-T)	(3)	(—)	(3)

Because the 1990 enacted appropriation level was within the Gramm-Rudman-Hollings Baseline Target, there is no B.A. reduction and, hence, no impact of the provisions of P.L. 99-177.

Authorization The Act of February 20, 1929, (45 Stat. 1253, 48 U.S.C. 1661).

Objectives To provide continued operational support for the American Samoa Government in order to promote the economic, social and political development of the territory of American Samoa, and to encourage increased efficiency in government programs and administration.

Base Program The base program provides Federal funding for support of the operations of the local American Samoa Government, including the judiciary. The Department of the Interior is committed to providing for a civil government in American Samoa until such time as Congress makes other provisions. The operations of the government that are supported by Department of the Interior funding include:

Education Services: The American Samoa Department of Education (DOEd) is responsible for staffing, coordinating, implementing, and evaluating instructional activities for early childhood, elementary, secondary, and vocational education in the territory. DOEd also provides for support services such as library, student transportation, supply and publication, lunch program, business affairs and school maintenance. According to DOEd, the number of students to be receiving instruction in FY 1991 is approximately 17,700, as compared to 17,350 in 1990.

Board of Higher Education: The Community College provides higher education for the first two years of college in subject areas such as communication, mathematics, science, humanities, business, teacher education, nursing, vocational trades, adult basic education, and continuing education. There is only one college in American Samoa. Every high school graduate is encouraged to attend American Samoa Community College prior to seeking advanced training outside of the territory. For FY 1991, the college estimates that it will offer 195 courses, serving approximately 2,750 students, as compared to 190 courses serving 2,300 students in FY 1990.

Health Services: The hospital serves as a general care facility equipped and staffed to provide diagnostic and therapeutic services in the fields of general surgery, internal medicine, obstetrics and gynecology, pediatrics, communicable diseases, ophthalmology, dental care, and ambulatory care. Cases which require specialized treatment not available at the local hospital are referred to Tripler Army Medical Center in Honolulu, and other facilities off-island. Dispensary services are also available throughout American Samoa.

Port Administration: Port Administration serves to control the statutorily designated port of entry in American Samoa. The port also operates as a transshipment point in the South Pacific. In its organizational framework, Port Administration supervises the Customs, Harbor, and Water Transportation divisions. It is also responsible for the Pago Pago International Airport, which operates as an enterprise fund and should require no funds from the Department of the Interior or local revenues.

Public Works: The Public Works Department provides for the construction and maintenance of all roads, sidewalks, seawalls, and public buildings; conducts all government and other facilities planning; and oversees the administration of project contracts of the American Samoa government.

Public Safety: The Department of Public Safety provides protection and security to citizens of American Samoa, provides protection for public and private properties, conducts and plans disaster readiness programs, provides security and rehabilitation programs for prison inmates, provides fire safety and prevention services, furnishes rescue services wherever and whenever needed, renders services by means of vehicle registration, driver licensing and vehicle inspection, and is responsible for the search and rescue services at sea formerly performed by the U.S. Coast Guard.

Legal Affairs: In addition to performing the functions of chief prosecutor and legal advisor to the Government of American Samoa, the Attorney General's Office also provides for the control of all immigration functions in the territory and serves as Territorial Registrar for documents that require certification and preservation. In an election year, the Attorney General acts as the election commissioner.

Judicial Branch: The Judicial Branch consists of a High Court, a District Court, and Appellate Court, and several village courts. The chief justice and associate justices of the High Court are Federal appointees. The High Court and judges who sit in the local courts are supported by clerical, professional and administrative staff. The High Court is both the court of original jurisdiction in most matters as well as the territorial appellate court of last resort.

A detailed summary of operations funding by program element is provided in Table 1. An estimate of local revenues and the application of these revenues to fund governmental operations is provided in Table 2.

Increase for FY 1991

(dollars in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
($)	20,850	21,000	+150
(FTE-T)	(3)	(3)	(—)

The proposed increase is being requested to improve the Audit and Internal Control capacity within American Samoa. The lack of adequate internal controls and budget discipline in American Samoa has been well-documented. The purpose of this increase is to bolster the territorial audit function, so as to improve oversight of revenue estimating techniques and expenditure control and to improve reporting on those items to both local officials and the Department of the Interior. Also requested, is a $54,000 increase for the salary costs of the High Court, which is required to pay the prevailing local wage rates but receives no funding from the American Samoa Government.

Distribution of Change by Object Class

	Amount
Grants, subsidies and contributions	+$150,000

TABLE 1

American Samoa
Operations Account

Application of Operations Grant by Program

(in thousands of dollars)

Program	1989 Actual	1990 Estimate	1991 Estimate	Inc.(+)/Dec.(-) 1991 over 1990
A. Education	5,679	5,679	5,679	—
B. Higher Education	1,155	1,155	1,155	—
C. Health Services	5,527	5,527	5,527	—
D. Port Administration	761	761	761	—
E. Public Safety	1,025	1,025	1,025	—
F. Public Works	5,513	5,513	5,513	—
G. Legal Affairs	494	494	494	—
H. Territorial Audit	-0-	-0-	96	+96
Subtotal General Operations	20,154	20,154	20,250	+96
I. High Court	622	696	750	+54
Total DOI Funding	20,776	20,850	21,000	+150
Total Local Revenues	30,502	27,450	27,621	+171
Total Other Federal Grants for all Activities	20,640	19,720	18,802	-918
Total Operations Budget	$71,918	$68,020	$67,423	$-597

TABLE 2

Operations Account
Distribution of Local Revenues
(in thousands of dollars)

ACTIVITY	1989 ACTUAL	1990 ESTIMATE	1991 ESTIMATE
Education	5,522	4,596	3,377
Higher Education	548	282	300
Health Services	5,618	4,014	3,377
Port Administration	672	448	448
Public Safety	1,428	1,300	1,338
Public Works	279	1,200	1,395
Legal Affairs	904	608	608
High Court	-0-	-0-	-0-
Total for Activities listed on Table 1	14,971	12,448	10,843
Local Revenues for Activities not listed on Table 1			
Scholarship Program	800	800	1,000
Public Information	880	785	1,025
Agriculture	812	785	852
Tourism	465	434	434
Development Planning	164	164	175
Marine/Wildlife Resources	145	150	160
Parks and Recreation	299	312	394
Governor's Office	2,174	1,928	1,928
Local Judiciary	199	199	231
Legislature	2,961	2,958	3,369
Administrative Services	429	363	363
Procurement	868	868	1,031
Treasury	2,158	2,158	2,517
Local Government	1,090	1,045	1,135
Human Resources	1,040	1,040	1,060
Public Defender	153	148	161
Territorial Audit	244	244	256
Election Office	145	150	167
Planning and Budget	487	471	520
CJPA	18	-0-	-0-
	15,531	15,002	16,788
TOTAL LOCAL REVENUES	30,502	27,450	27,621 **

** Preliminary, unverified estimate.

Justification of Program and Performance

Activity: American Samoa
Subactivity: Construction Grants

(dollar amounts in thousands)

		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from Base
Construction Grants	($)	5,525	5,525	—	1,000	+1,000
	(FTE-T)	(—)	(—)	(—)	(—)	(—)
Total Requirements	($)	5,525	5,525	—	1,000	+1,000
	(FTE-T)	(—)	(—)	(—)	(—)	(—)

Impact of Public Law 99-177

		1990 Enacted to Date	P.L. 99-177 B.A. Reduction	1990 Adjusted Appropriation
Construction Grants	($)	5,525	—	5,525
	(FTE-T)	(—)	(—)	(—)

Because the 1990 enacted appropriation level was within the Gramm-Rudman-Hollings Baseline Target, there is no B.A. reduction and, hence, no impact of the provisions of P.L. 99-177.

Authorization The Act of February 20, 1929, (45 Stat. 1253, 48, U.S.C. 1661).

Objectives To assist American Samoa in providing infrastructure improvements, which increase opportunities for economic development; and to complement the ongoing privatization initiative.

Base Program The construction program for American Samoa is dedicated to the improvement of the basic infrastructure of the territory in the interest of furthering economic development through diversification. The Department believes that with these basic improvements and an aggressive economic development program, the territory has the potential to develop into a self-sufficient community.

Increase for FY 1991

(in thousands of dollars)

	FY 1991 Base	FY 1991 Estimate	Difference
($)	—	1,000	+1,000
(FTE-T)	(—)	(—)	(—)

The proposed increase is for school buses and classroom buildings. Following the reconstruction of petroleum storage facilities, which was addressed in the Department of the Interior and Related Agencies Appropriations Act for Fiscal Year 1990, these items are listed as top priorities in the American Samoa Government budget proposal for Fiscal Year 1991.

The following projects are requested for funding in FY 1991:

Project	Amount
Classroom Buildings....................................	825,000
School Buses...	175,000
Total....................................	$1,000,000

Distribution of Changes by Object Class

The object class detail of the proposed $1,000,000 increase is as follows:

	Amount
Grants, subsidies and contributions	+$1,000,000

Justification for Construction

Activity: American Samoa
Subactivity: Construction Grants

Project	Total Estimated Cost	Total BA through FY 1990	FY 1991 Request
Two (2) New Classroom Buildings	$825,000	—	$825,000

Statement of Need

This project provides for new school buildings at two (2) separate sites. Most of the present buildings were built over twenty-five years ago and have taken a severe beating due to the ongoing weather conditions. Also the schools built in the past did not plan on the drastic population increase occurring in American Samoa.

Description

The American Samoa Government will contract for the construction of two school buildings, at sites which the American Samoa Department of Education determines to be in most critical need.

Benefits

The proposed project would eliminate some of the overcrowded enrollment problems in Samoa, improve sanitary conditions and provide for a better learning environment.

Cost of Completion

A. Cost Categories:

Design/Construction 2 buildings	$760,000
Furniture	65,000
Total	$825,000

B. Source of Funds:

There are no local funds available for this project. Design/Construction and Furniture costs will be completely funded by this proposed FY 1991 Department of the Interior construction grant to American Samoa. The American Samoa Government will be responsible for all costs related to the operation and maintenance after completion of construction.

Justification for Construction

Activity: American Samoa
Subactivity: Construction Grants

Project	Total Estimated Cost	Total BA through FY 1990	FY 1991 Request
Five (5) School Buses	$175,000	—	$175,000

Statement of Need

Presently the current school bus fleet within American Samoa consists of over 40% of its vehicles being in excess of ten (10) years old. A number of these buses (5) were acquired in 1975 and replacement parts are no longer manufactured by the supplier. In the present fleet, only three (3) buses meet federal regulations concerning a five year active life of operation. The student population has increased 6% since September 1985 and is anticipated to increase another 4% by fiscal year 1991.

Description

This project provides for five (5) new buses to replace buses that have been operational for over ten (10) years.

Benefits

The acquisition of these buses will provide safe and efficient transportation for the school population of American Samoa.

Cost of Completion

A. Cost Categories:

	FY 1991
5 Buses @ $35,000	$175,000
Total	$175,000

B. Source of Funds:

There are no local funds available for this project. Costs for this purchase will be completely funded by this proposed FY 1991 Department of the Interior construction grant to American Samoa. The American Samoa Government will be responsible for all costs related to operation and maintenance after purchase of these school buses.

Justification of Program and Performance

Activity: Virgin Islands

(dollar amounts in thousands)

Program		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from 1990	Inc. (+) Dec. (-) from base
Construction Grants	($)	1,000	1,000	—	3,000	+2,000	+3,000
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Total Requirements	($)	1,000	1,000	—	3,000	+2,000	+3,000
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)

The Virgin Islands government is still not in an economic posture to be able to provide for all of its capital infrastructure needs without Federal assistance. Like the other territories, the objective is to increase economic self-sufficiency through a broadening of the local tax-base and improved government efficiency. The Department will continue to support, subject to budget constraints, limited grant assistance for improvements to the infrastructure of the Virgin Islands where the lack of improvements is a hindrance to economic development, or poses an immediate threat to the health or safety of residents and visitors.

Such is the case with the Virgin Islands prisons. The correctional facilities are seriously over-crowded on both St. Thomas and St. Croix. Due to an increase in criminal activity and consequent increase in police and drug interdiction activities to stop such behavior, the insufficiency of prison cell space for even short term detainees is becoming critical. Due to this lack of space, Federal law enforcement officials have often been denied use of the St. Thomas jail, which is currently at double its capacity, for holding prisoners in transit, including illegal aliens. The St. Croix Golden Grove prison was built for a capacity of 135 inmates and currently houses over 175. As a result of an investigation of conditions at Golden Grove, former Governor Juan Luis entered into a Consent Decree with the U.S. Attorney General affirming that conditions at Golden Grove prison violate the civil rights of the prisoners confined there. It was further agreed that certain conditions related to inmate safety would be corrected immediately, and that a plan for correcting other problems caused by overcrowding would be addressed. To date, limited action has been taken to comply with this Decree.

In addition, the prison was seriously damaged by the high winds and wave action of Hurricane Hugo in September, 1989. Although disaster assistance is being provided by the Federal Emergency Management Agency (FEMA), this assistance will only restore the prison to the condition it was in prior to the impact of the hurricane.

Since local funding is also insufficient to meet this need, and since the U.S. Attorney General is contemplating costly litigation to compel the Virgin Islands government to comply with the Consent Decree, the Department is proposing $3,000,000 for prison expansion in this budget.

Justification of Program and Performance

Activity: Virgin Islands
Subactivity: Construction Grants

(dollar amounts in thousands)

		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from Base
Construction Grants	($)	1,000	1,000	—	3,000	+3,000
	(FTE-T)	(—)	(—)	(—)	(—)	(—)

Impact of Public Law 99-177

		1990 Enacted to Date	P.L. 99-177 B.A. Reduction	1990 Adjusted Appropriation
Construction Grants	($)	1,000	—	1,000
	(FTE-T)	(—)	(—)	(—)

Because the 1990 enacted appropriation level was within the Gramm-Rudman-Hollings Baseline Target, there is no B.A. reduction and, hence, no impact of the provisions of P.L. 99-177.

Authorization Section 207 of Public Law 101-219.

Objectives To provide funding assistance for capital improvements which will enhance revenue collection, economic development, or public safety in the Virgin Islands.

Base Program

The base program for construction activity in the Virgin Islands involves working with the government of the Virgin Islands to identify critical infrastructure needs and to find funding to meet those needs. Ad hoc construction grants through the Department of the Interior are but one limited option that is considered. Other options include a capital improvement program funded by local revenues, other Federal grant programs, capitalization and ownership by the private sector, private and governmental loans or loan guarantees, and various combinations of the above. As the Virgin Islands government moves toward greater self-sufficiency and improves its financial condition, these other options will become much more viable.

The program also includes performing necessary functions of a grantor agency. These include monitoring the progress of ongoing construction activity, ensuring the use of competitive processes in the solicitation and award of contracts, ensuring sound financial controls and reporting, and working with the local government to correct identified deficiencies.

Increase for FY 1991

(dollars in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
($)	—	3,000	+3,000
(FTE-T)	(—)	(—)	(—)

The proposed budget for FY 1991 will fund expansion of the Golden Grove prison on St. Croix. The existing prison is damaged and seriously over-crowded, causing increased costs of off-island prisoner transfer (where possible), a violation of the constitutional rights of inmates, and unacceptable risks to the safety of residents and tourists.

Distribution of Change by Object Class

The object class detail of the proposed $3,000,000 increase is as follow:

	Amount
Grants, subsidies and contributions	+$3,000,000

Justification for Construction

Activity: Virgin Islands
Subactivity: Construction Grants

Project	Total Estimated Cost	Total BA through FY 1990	FY 1991 Request
Prison Expansion	$5,000,000	$1,000,000	$3,000,000

Statement of Need

The correctional facilities of the U.S. Virgin Islands are severely overcrowded and, due to increasing criminal activity, law enforcement officials expect the demand for inmate housing to become even greater over the next five years. The transfer of sentenced prisoners to stateside institutions has been curtailed since prison riots during late 1987 reduced space in the already strained Federal prison system by over 1000 beds. The St. Thomas jail, designed for a maximum of 50 short term detainees, currently houses an average of 73 prisoners, including many with long term sentences, and 83 detainees. The St. Croix Golden Grove prison was built for a capacity of 135 inmates and currently houses over 175 prisoners and 37 detainees. Due to a lack of cell space, Federal authorities have often been denied use of the St. Thomas jail to hold prisoners in transit, including illegal aliens.

Current corrections construction statistics indicate the per prisoner cost for prison construction is $39,000. This includes transportation and associated costs of importing construction material. Based on the number of detainees and anticipated growth, a minimum of 127 additional beds are needed. The necessity of getting the additional space is underscored by the fragile nature of the Virgin Islands' economy, which is almost totally dependent on tourism. If the courts should force the Virgin Island's Government to reduce the number of prisoners because of lack of space, there would be an alarming affect on both the visitors and residents, certain to cause a negative impact on the economy. The President's 1990 budget included $1,000,000 towards this project.

In FY 1991, the Department is proposing to fund an additional $3,000,000 for expansion of this critical project.

Description

The proposed project is to design and construct a 127-bed adult correctional facility within the St. Croix Golden Grove prison grounds.

Benefits

The expanded prison capacity will relieve the severely overcrowded conditions at U.S. Virgin Islands correctional facilities, require less prisoner transfer to U.S. mainland institutions, permit routine utilization of holding cells by Federal authorities, and enable the St. Thomas jail to be used for short term detainees as intended.

Cost of Completion

A. Cost Categories

Design	$ 400,000
Construction	2,600,000
Total	$ 3,000,000

B. Source of Funds:

Costs of these projects will be funded by the proposed FY 1991 construction grant from the Department of the Interior, and $1,000,000 from local revenues of the Virgin Islands Government. The Virgin Islands Government will also be responsible for all costs related to operation and maintenance after completion of construction.

Justification of Program and Performance

Activity: Northern Mariana Islands

(dollar amounts in thousands)

Subactivity		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from 1990	Inc. (+) Dec. (-) from base
Covenant	($)	33,850	33,850	33,850	28,850	-5,000	-5,000
Grants	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Special	($)	125	125	—	—	-125	—
Program Grants	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Total	($)	33,850	33,850	33,850	28,850	-5,125	-5,000
Requirements	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)

Fiscal year 1985 was the seventh and final full year of the first funding period mandated by the "Covenant to Establish the Commonwealth of the Northern Mariana Islands" (P.L. 94-241). In 1984, the President and the Governor of the Northern Mariana Islands each appointed Special Representatives to discuss and make recommendations for future funding assistance.

Discussions were conducted throughout fiscal year 1985. The result was an agreement signed by the representatives on July 10, 1985. Congressional approval of this agreement was included in P.L. 99-396. The fiscal year 1991 budget request reflects the schedule of payments contained in this agreement.

The thrust of the Special Representatives Agreement is to place a decreasing emphasis in the Northern Mariana Islands on Federal subsidies for government operations and a greater emphasis on economic development activities. This should result in improved government efficiency and an increasing private sector-oriented economic base. It should also preclude the need for further "ad hoc" construction grant funding from the U.S. Congress.

Justification of Program and Performance

Activity: Northern Mariana Islands
Subactivity: Covenant Grants

(dollar amounts in thousands)

Subactivity		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from 1990	Inc. (+) Dec. (-) from base
Operations	($)	13,000	13,000	13,000	11,000	-2,000	-2,000
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Capital	($)	20,850	20,850	20,850	17,850	-3,000	-3,000
Development	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Total	($)	33,850	33,850	33,850	28,850	-5,000	-5,000
Requirements	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)

Impact of Public Law 99-177

		1990 Enacted to Date	P.L. 99-177 B.A. Reduction	1990 Adjusted Appropriation
Covenant Grants	($)	33,850	—	33,850
	(FTE-T)	(—)	(—)	(—)

Because the 1990 enacted appropriation level was within the Gramm-Rudman-Hollings Baseline Target, there is no B.A. reduction and, hence, no impact of the provisions of P.L. 99-177.

Authorization P.L. 94-241, A Joint Resolution to Approve the Covenant to Establish a Commonwealth of the Northern Mariana Islands in Political Union with the United States of America, Article VII, "United States Financial Assistance", 48 U.S.C. 1681, as amended by Section 10 of P.L. 99-396 (100 Stat. 840).

Objectives In accordance with the second multi-year financial assistance agreement, "Agreement of the Special Representatives on Future United States Financial Assistance for the Northern Mariana Islands", negotiated under the terms of the "Covenant to Establish a Commonwealth of the Northern Mariana Islands in Political Union with the United States of America", the Governments of the United States and the Northern Mariana Islands mutually agree that the goals of an improved standard of living and greater economic and financial independence for the Northern Mariana Islands can best be achieved through the promotion of economic development, the lessening of dependence on Federal financial assistance for government operations, and the reduction of the size of the government. In working towards these objectives, emphasis will be given to maximizing capital development through the use of public and private financing techniques.

Base Program In accordance with the terms of the "Covenant to Establish a Commonwealth of the Northern Mariana Islands in Political Union with the United States of America", the United States provides direct multi-year financial support to the Government of the Northern Mariana Islands for local government operations, economic and capital development, and certain special programs. Section 702 of the Covenant, P.L. 94-241, guaranteed the Government of the Northern Mariana Islands direct Federal grant assistance for the first seven full fiscal years following its January 8, 1978, effective date.

The Covenant further provided that this formula was to remain in effect after the end of the initial period in September 1985, until a new agreement was approved by the Congress. During the 7 3/4 years covered by the initial agreement, $192,456,000 in direct Federal grant assistance was provided to the Northern Mariana Islands for government operations, and economic and capital development.

During FY 1985, appointed representatives from the Governments of the Northern Mariana Islands and the United States discussed and mutually agreed upon recommendations for a new multi-year financial assistance agreement which was presented to Congress for ratification. The new agreement covers a period of seven fiscal years beginning October 1, 1985, and ending September 30, 1992. The agreement provides for $228 million in direct Federal grant assistance to the Northern Mariana Islands for local government operations, economic and capital development and special programs. Payment will be made annually in accordance with the approved schedule, which demonstrates a commitment by the Government of the Northern Mariana Islands to the program objectives of greater capital development, decreased dependence on Federal financial assistance for government operations, and a reduction in the size of the government. Over the seven year period, Federal funding supporting government operations decreases by an average of approximately $1.0 million annually, while increased funding is provided for capital development. Capital development will proceed in accordance with a strategic seven-year, project-specific plan developed by the Government of the Northern Marina Islands and approved by the United States Department of the Interior. Capital development is defined as basic and essential infrastructure such as power, water, sewers, roads, schools, ports and harbors, and public facilities. FY 1991 represents the sixth year of the new funding agreement.

Pursuant to the provisions of the "Agreement of the Special Representatives on Future United States Financial Assistance for the Commonwealth of the Northern Mariana Islands", the Office of Territorial and International Affairs executed a Grant Pledge Agreement on September 18, 1987. This Grant Pledge Agreement committed DOI to pay covenant funds for approximately $44,000,000 of capital improvement projects into a trust fund. This Grant Pledge Agreement permitted the remarketing of up to $44 million of bonds, the proceeds of which were placed in a construction fund held by the bond trustee bank and released for construction projects upon approval by OTIA. A second Grant Pledge Agreement for an additional $30 million was executed on August 1, 1988. Once specific projects are identified and approved by OTIA, in accordance with the approved seven-year plan, funds are disbursed by the trustee directly to the Commonwealth.

In addition to these two grant pledge agreements, a direct grant for $16,438,000 was executed on January 25, 1989 by the Office of Territorial and International Affairs and the Commonwealth Development Authority, CNMI. These funds are identified as capital development covenant funds appropriated for the CNMI but not pledged against the bonds. These funds shall be used for specific projects identified and approved by OTIA, in accordance with the approved seven-year plan. The balance of unpledged CIP appropriations remain available for future projects.

Decrease for FY 1991

(dollars in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
($)	33,850	28,850	-5,000
(FTE-T)	(—)	(—)	(—)

The decrease represents a planned decrease in both operations and capital development funding for FY 1991 as negotiated and set forth in the seven-year Special Representatives Agreement under the Covenant.

Distribution of Change by Object Class

The object class detail for the proposed $5,000,000 decrease is as follows:

	Amount
Grants, subsidies, and contributions	-$5,000,000

Summary of Covenant Funding

The following are the funding provisions of the proposed multi-year financial assistance agreement between the Government of the United States and the Northern Mariana Islands.

1. Full Faith and Credit. After approval of this Agreement by the Congress and the President of the United States, payments under this second multi-year financial assistance agreement shall be accorded the full faith and credit of the United States, except that the full faith and credit for the payment of government operations funds shall be subject to the performance standards (paragraph 4 of this Part) and settlement of disputes provisions contained in this agreement.

2. Schedule of Payments. The Government of the United States shall provide the Government of the Northern Mariana Islands $228 million over a seven-year period, beginning October 1, 1985, and ending September 30, 1992, to be appropriated according to the following schedule:

Fiscal Year	Capital Development	Government Operations	Special Programs	Total
1986	$ 8,466,000	$ 17,760,000	$1,500,000	$ 27,726,000
1987	18,294,000	17,050,000	—	35,344,000
1988	18,000,000	16,360,000	—	34,360,000
1989	25,150,000	15,000,000	—	40,150,000
1990	20,850,000	13,000,000	—	33,850,000
1991	17,850,000	11,000,000	—	28,850,000
1992	17,390,000	10,330,000	—	27,720,000
Totals	$126,000,000	$100,500,000	$1,500,000	$228,000,000

When appropriated, funds shall be granted annually by the Department of the Interior according to such regulations as are applicable to such grants. All previous funds granted under Section 702 of the Covenant remain subject to the provisions and restrictions under which they were granted.

3. Capital Development.

a) The Government of the Northern Mariana Islands shall develop a seven-year strategic plan for capital improvement projects and economic development activities. At a minimum, eighty percent of the annual capital development funds identified in the schedule of payments shall be obligated and expended in accordance with such plan that shall provide for essential infrastructure through capital improvement projects in the areas of power, water, sewers, roads, schools, ports and harbors, and public facilities. The balance, not to exceed a maximum of twenty percent of such annual capital development funds, shall be obligated and expended in accordance with the provisions of such plan that shall provide for economic development activities. Such plan and amendments thereto shall be submitted in accordance with Northern Mariana Islands law and mutually agreed upon by the Government of the Northern Mariana Islands and the Secretary of the Interior, or his designee. The plan shall be project specific with sufficient detail to perform cost/benefit analyses and develop financing strategies and alternatives. The Government of the Northern Mariana Islands shall establish a revolving fund, into which repayments of principal and interest from revenue-producing projects shall be deposited for financing of additional revenue-producing capital development projects. Interest earned on capital development funds before such funds are expended shall be treated as capital development funds; interest earned on moneys in the revolving fund shall become part of the revolving fund.

b) The payment of federally appropriated funds, backed by the full faith and credit of the United States, may be applied or directed by the Government of the Northern Mariana Islands (but such an application or direction by the Government of the Northern Mariana Islands shall not be a guarantee of payment by the United States, either directly or indirectly) for the repayment of debt instruments issued by the Government of the Northern Mariana Islands for capital development funds.

c) The islands of Rota and Tinian shall each receive no less than a 1/8 share and the island of Saipan shall receive no less than a 2/8 share of annualized capital improvement project funds which shall be no less than 80% of the capital development funds identified in the Schedule of Payments in paragraph 2 of this Part.

4. Government Operations. The full faith and credit of the United States for the payment of government operations funds shall be subject to fulfillment of the following performance standards during the entire seven-year period:

a) The Government of the United States shall provide $100.5 million in operations funds over the seven-year period in the annual amounts set forth in the schedule of payments. These annual funds shall be provided according to a separate payment schedule developed by the Government of the Northern Mariana Islands consistent with Federal regulations.

b) The Government of the United States, through its designee, subject to the availability of funds, and at the request of and in cooperation with the Government of the Northern Mariana Islands, shall provide technical assistance, including but not limited to the following purposes: (i) the development and operation of a financial management system, (ii) the development of a plan for the transfer to the private sector by the Government of the Northern Mariana Islands of those functions that can be privately owned and operated, (iii) the promotion of government efficiency, (iv) the improvement of Northern Mariana Islands business development capability, (v) the promotion of business development and marketing by the Government of the Northern Mariana Islands, and (vi) assistance in bonding and financing techniques to be used in capital development.

c) Representatives of both governments shall meet at least biennially to evaluate and discuss progress and achievements made under this agreement.

d) The Government of the Northern Mariana Islands shall demonstrate a decreasing reliance on Federal Covenant financial assistance for government operations by reducing such assistance by an average of $1 million a year during the seven-year period of this agreement, and by reducing the overall size of government. Capital development funds shall not be spent for government operations purposes.

e) The Government of the Northern Mariana Islands shall ensure continuation of an independent public agency that sets rates and fees for public utilities as described in Northern Mariana Islands Public Law 4-47. These services shall be fully funded, including both current expenses and long-term debt, without government subsidy through such user rates and fees by the end of the third year after this agreement is effective.

f) The Government of the Northern Mariana Islands shall ensure the continued administration of capital development funds by an autonomous public agency of the Northern Mariana Islands, as described in Northern Mariana Islands Public Law 4-49. Such administration shall include the coordination and approval of all public financing of capital improvement projects and economic development activities.

g) The Government of the Northern Mariana Islands shall obligate and expend those capital development funds to be devoted to capital improvement projects only according to definitions now contained in Northern Mariana Islands Public Law 4-46.

h) The Government of the Northern Mariana Islands, within three months after this agreement becomes effective, shall initiate a study and an implementation plan that shall ensure an actuarially sound, locally funded pension system for the Government of the Northern Mariana Islands by the end of the seven years after this agreement becomes effective. Alternative strategies to bring the pension system into actuarial balance and alternative time periods necessary to accomplish this objective shall also be analyzed. The plan shall be fully implemented within the seven years referred to above unless otherwise mutually agreed by representatives of the Government of the United States and the Government of the Northern Mariana Islands based on long-term financial considerations and sound governmental management.

i) The Government of the Northern Mariana Islands shall, within one year after this agreement becomes effective, develop a comprehensive plan for the transfer to the private sector of selected functions currently operated by the Government of the Northern Mariana Islands, and thereafter to the extent feasible, shall implement such transfers to the private sector.

5. Special Programs. The Government of the United States shall provide a one-time payment of $1 million for the Commonwealth Health Center operational start-up costs, and $500,000 for special technical assistance for developing a plan to fully fund the Government of the Northern Mariana Islands pension system. Should a portion of these pension study funds remain unexpended, the balance may be used for such technical assistance as the Government of the Northern Mariana Islands may determine.

(Projections as of July 1985)
with updated data as of 8/19/89

COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS
SCHEDULE OF PROJECTED GOVERNMENT OPERATIONS
FISCAL YEARS 1986 TO 1992
($000's)

LOCAL REVENUE	1986	1987	1988	1989	1990	1991	1992	TOTAL
TAXES	$18,116	$19,022	$19,973	$20,972	$22,021	$23,122	$24,278	$147,504
LICENSES & PERMITS	747	785	824	866	909	954	1,002	6,087
CHARGES FOR SERVICES	7,083	7,387	7,809	8,199	8,609	9,039	9,491	57,617
FINES AND FORFEITURES	487	511	537	564	592	621	653	3,965
MISCELLANEOUS	3,807	4,045	4,197	4,399	4,869	5,264	5,076	31,657
TOTAL LOCAL REVENUE	$30,240	$31,750	$33,340	$35,000	$37,000	$39,000	$40,500	$246,830
(Update as of 8/19/89)	(43,234)	(52,035)	(72,422)	(76,813)	(85,671)	(92,500)	(99,300)	(521,975)
GOVERNMENT OPERATIONS EXPENDITURES								
PERSONNEL SERVICES	$27,490	$27,490	$28,590	$28,890	$28,890	$28,890	$29,500	$199,740
TRAVEL	810	810	810	810	810	810	810	5,670
EQUIPMENT RENTAL	100	100	100	100	100	100	100	700
PROFESSIONAL SERVICES	750	750	750	750	750	750	750	5,250
CAPITAL OUTLAY	900	1,100	900	900	900	900	900	6,500
MISCELLANEOUS	17,950	18,550	18,550	18,550	18,550	18,550	18,770	129,470
TOTAL GOVERNMENT OPERATIONS EXPENDITURES	$48,000	$48,800	$49,700	$50,000	$50,000	$50,000	$50,830	$347,330
(Update as of 8/19/89)	(60,994)	(69,054)	(77,642)	(82,700)	(98,671)	(103,500)	(109,630)	(602,191)
FINANCIAL ASSISTANCE NEEDED FOR OPERATIONS	$17,760	$17,050	$16,360	$15,000	$13,000	$11,000	$10,330	$100,500
(Update as of 8/19/89)	(17,760)	(17,050)	(5,221)*	(5,887)*	(13,000)	(11,000)	(10,330)	(80,248)
COVENANT FUNDS SHARE OF EXPENDITURES	37%	35%	33%	30%	26%	22%	20%	29%
(Update as of 8/19/89)	(29%)	(25%)	(7%)	(7%)	(13%)	(11%)	(9%)	(13%)

* Surplus revenues in 1988 and 1989 used to reduce accumulated deficit.

NMI Covenant
First Funding Agreement

	Operations	EDLF	Construction	Total
FY 1978*	9,871	1,586	4,607	16,064
FY 1979	11,918	2,528	5,779	20,225
FY 1980	13,038	2,765	6,321	22,124
FY 1981	14,390	3,052	6,977	24,419
FY 1982	15,231	3,231	7,382	25,844
FY 1983	16,108	3,416	7,807	27,331
FY 1984	16,337	3,468	7,921	27,726
FY 1985	16,927	3,589	8,207	28,723
7 3/4 year Total	113,820	23,635	55,001	192,456
7 full-year Total	103,949	22,049	50,394	176,392

* Funding provided for only 3/4 year in 1978

Justification of Program and Performance

Activity: Territorial Administration

(dollar amounts in thousands)

Subactivity		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from 1990	Inc. (+) Dec. (-) from base
Office of Territorial & International Affairs	($)	2,946	2,946	3,033	3,581	+635	+548
	(FTE-T)	(41)	(41)	(41)	(46)	(+5)	(+5)
Technical Assistance	($)	5,885	5,885	5,885	6,385	+500	+500
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Guam Power Authority Loan Assistance	($)	1,458	1,458	1,387	1,387	-71	—
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Maintenance Assistance Fund	($)	3,000	3,000	3,000	2,500	-500	-500
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Brown Tree Snake	($)	1,000	1,000	1,000	—	-1,000	-1,000
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Drug Interdiction/ Abuse Prevention	($)	—	—	—	1,000	+1,000	+1,000
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Total Requirements	($)	14,289	14,289	14,305	14,853	+564	+548
	(FTE-T)	(41)	(41)	(41)	(46)	(+5)	(+5)

The Office of Territorial and International Affairs (OTIA) carries out Administration policy, helps coordinate Federal programs, and provides financial and technical assistance to the insular areas.

In fiscal year 1990, the objectives of the office are to clarify Federal policy with respect to the insular areas; to help resolve political status issues; to better organize the office to improve its responsiveness; and to improve internal controls and accountability for the Federal funds it administers.

For fiscal year 1991, OTIA is seeking additional funding and personnel to better accomplish its objectives. Specifically, OTIA is requesting funding for five additional FTEs. The new personnel will be used to staff field offices in the freely associated states, to increase Federal oversight of the Republic of Palau, to enhance grant administration and budget, and to improve control over Federal funds to the insular areas.

By fiscal year 1991, the operations and maintenance improvement program is expected to be well-established. This is a joint program with the U.S. Army Corps of Engineers, which provides technical and administrative support. OTIA is responsible for coordinating policy, general administration and financing for the program. The program establishes partnerships with the insular governments to improve their institutional and technical capability to operate and maintain vital infrastructure. Political and financial commitments are required from all parties.

The technical assistance program continues at a level of funding higher than the base budget, and new funding is proposed for assistance to Guam and the Commonwealth of the Northern Mariana Islands to help mitigate the impact on their societies resulting from the implementation of the Compact of Free Association. Significant migration is taking place from Micronesia into these two areas, straining their capacity to provide public safety and social services. The Technical Assistance program provides a wide array of assistance through a combination of private sector and Federal expertise. Adequate funding for this program is essential to reducing the vulnerability to risk of Federal financial assistance to the insular areas, by improving internal controls in the insular governments. The breakdown of control in many areas (procurement, accounting, tax administration, property management etc.) is well documented through audits performed by the Office of the Inspector General and others. The program is also vital for continuing assistance in economic development, public safety, health care, education and other functions of governments.

Federal formula grant funding for drug interdiction and abuse prevention was severely cut for the Pacific insular areas in the Omnibus Drug Act of 1988. OTIA is requesting $1 million to help finance regional programs and other special assistance required for the War on Drugs. The seriousness of drug problems in the insular areas is well-documented and was highlighted in July 1988, when Federal and local law enforcement agents culminated a lengthy investigation of a marijuana/heroin smuggling ring by arresting 46 individuals in Guam and Palau. Of the 46 arrested, 33 have already pleaded guilty.

Funds are also requested to continue loan subsidy payments to the Federal Financing Bank according to refinancing terms of a guaranteed loan to the Guam Power Authority.

No additional funding is being requested in this budget for eradication and control of the Brown Tree Snake on Guam. Funds appropriated in FY 1990 are sufficient to get the program underway in concert with Guam and the U.S. Fish and Wildlife Service. A reassessment of program needs will be undertaken during FY 1991 to determine future budget needs.

Justification of Program and Performance

Activity: Territorial Administration
Subactivity: Office of Territorial and International Affairs

(dollar amounts in thousands)

Subactivity		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from 1990	Inc. (+) Dec. (-) from base
Office of Territorial & International	($)	2,946	2,946	3,033	3,581	+635	+548
Affairs	(FTE-T)	(41)	(41)	(41)	(46)	(+5)	(+5)
Total	($)	2,946	2,946	3,033	3,581	+635	+548
Requirements	(FTE-T)	(41)	(41)	(46)	(+5)	(+5)	(+5)

Impact of Public Law 99-177

		1990 Enacted to Date	P.L. 99-177 B.A. Reduction	1990 Adjusted Appropriation
Office of Territorial and International	($)	2,946	—	2,946
Affairs	(FTE-T)	(41)	(—)	(41)

Because the 1990 enacted appropriation level was within the Gramm-Rudman-Hollings Baseline Target, there is no B.A. reduction and, hence, no impact of the provisions of P.L. 99-177.

Authorization Secretarial Order 3046, February 14, 1980, establishing the organization of the Assistant Secretary for Territorial and International Affairs.

Objectives

- Fulfilling the United States' fundamental commitment to encourage political, economic, and social development of the trust territory, the freely associated states, and the U.S. territories and commonwealths;

- Working with insular governments to increase private sector participation in heretofore government-run activities, to encourage economic diversification, and to enhance government efficiency;

- Advocating a more comprehensive and consistent treatment of the insular areas through Federal programs, and reasonable changes in regulations and laws applied to U.S. territories;

- Ensuring fiscal accountability and responsibility for the use of all Federal funds in the insular areas;

- Providing technical assistance in such areas as economic development, public safety, financial management and health care services, to the U.S. territories and the freely associated states.

- Improving maintenance of public facilities and infrastructure in the insular areas.

Base Program The Office of Territorial and International Affairs (OTIA) provides policy direction, program coordination, and financial support for all insular programs. The thrust of the policy efforts is directed toward initiating and reviewing major policy and program proposals and coordinating them with existing Federal programs.

The office is staffed primarily by professional personnel and clerical support. Most administrative functions are performed by the Office of Policy, Budget and Administration and paid for through the Working Capital Fund.

The workload is sizable and continuous because of the wide range of responsibilities placed on the office for seven different insular governments. Technical assistance is provided in all aspects of government functions; and program and policy coordination is carried out with virtually every Federal Department and Agency. Policy issues such as political status questions are extremely complex and sensitive. Communications and requests for information come in from insular executives, managers and legislatures; as well as the press, private businesses, the U.S. Congress, and the general public. Several hundred grants, ranging from small technical assistance projects to major construction projects, require continuous administration and internal controls. Financing and economic conditions are monitored continuously for seven different governments. International travel, communications, and issues are monitored for all Departmental programs.

Most of the office is located in Washington, D.C. where policy and budget decisions are made under the auspices of the Assistant Secretary and other Administration officials and processes. However, to maintain communications and responsiveness to both insular and Federal needs, the office also maintains a small corps of representatives and technical personnel in the field.

One of the major focuses in 1990 will be to examine OTIA's roles and relationships and how they can best be reorganized and structured to improve its efficiency and responsiveness.

Increase for FY 1991

(dollars in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
($)	3,033	3,581	+548
(FTE-T)	(41)	(46)	(+5)

The increase for fiscal year 1991 is to pay for five additional positions ($548,000).

Two of these positions will be located in the U.S. embassies in the Federated States of Micronesia and the Republic of the Marshall Islands. The purpose of these positions is to carry out mandated Interior functions in the freely associated states, particularly monitoring and helping resolve issues related to continuing Federal programs; monitoring and advising the local governments and the Washington office on technical assistance needs and projects; and monitoring the financial assistance provided to the freely associated states and the degree to which this assistance addresses economic development plans and objectives.

One of these positions is required to meet Administration and Departmental responsibilities with respect to the Republic of Palau. A policy assumption that has been in place since 1981, namely imminent implementation of the Compact of Free Association, has failed to materialize. In the meantime, institutions and personnel placed in the Pacific to carry out our trusteeship responsibilities have been dismantled or terminated. The office now has no Federal officials on sight with specific responsibilities for Palau, at a time when Palau faces both political and financial crises. The new position would be located in the insular area to monitor Federal funds and other assistance provided to Palau and to restore effective communications and oversight.

The other two positions are to improve grant administration, budget, and internal controls. The office is charged with a huge responsibility of managing and ensuring the programmatic use of several hundred million dollars annually. Only one position is available and fully dedicated to that purpose. This creates a significant vulnerability to risk that has been well-documented by the Inspector General and other auditors. Merely responding to these audits is a full-time job. To respond and make use of the constructive criticism that is contained in the audits requires more staff. Effective audit implementation and internal controls are essential both to effective handling of Federal funds and the efficient administration of insular governments by those governments. One position would be used for a full-time person to monitor grant terms and conditions and the status of projects and otherwise support the grant administrator. The other position would be a full-time internal control coordinator to conduct self-initiated internal reviews and coordinate audit recommendations with the insular governments and the technical assistance program to ensure that valid audit recommendations are implemented.

In addition, because of the small size of the office, individuals recruited for these positions would be required to have multi-disciplined financial skills to assist in budget analysis and formulation, account reconciliation and technical assistance.

Distribution of Change by Object Class

		Amount
11.0	Personnel compensation	+$291,000
12.0	Personnel benefits	+ 56,000
21.0	Travel	+ 34,000
22.0	Transportation of things	+ 75,000
23.1	Rental payments to GSA	+ 20,000
23.2	Communications, utilities and other rent	+ 50,000
25.0	Other services	+ 7,000
26.0	Supplies and materials	+ 5,000
31.0	Equipment	+ 10,000
	Total	+$548,000

Justification of Program and Performance

Activity: Territorial Administration
Subactivity: Technical Assistance

(dollar amounts in thousands)

Program		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from 1990	Inc. (+) Dec. (-) from base
Technical	($)	5,885	5,885	5,885	6,385	+500	+500
Assistance	(FTE-)	(—)	(—)	(—)	(—)	(—)	(—)
Total	($)	5,885	5,885	5,885	6,385	+500	+500
Requirements	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)

Impact of Public Law 99-177

		1990 Enacted to Date	P.L. 99-177 B.A. Reduction	1990 Adjusted Appropriation
Technical Assistance	($)	5,885	—	$5,885
	(FTE-T)	(—)	(—)	(—)

Because the 1990 enacted appropriation level was within the Gramm-Rudman-Hollings Baseline Target, there is no B.A. reduction and, hence, no impact of the provisions of P.L. 99-177.

Authorization Public Law 96-597, section 601, authorized and urged the Secretary of the Interior to provide technical assistance in the form of "research, planning assistance, studies, and demonstration projects" to the territories through Departmental staff, reimbursements to other departments, grants, cooperative agreements, or "the employment of private individuals, partnerships, or corporations." (48 U.S.C. 1469d).

Objectives To provide for a coordinated, cohesive technical assistance program that will improve the entire range of insular governmental operations.

Base Program In fiscal year 1990, the technical assistance program will focus on completion of the evaluation of operations and maintenance needs in the insular areas; implementing audit recommendations and other internal reviews to improve internal controls in the governments; economic development, particularly in the areas of fisheries, agriculture and mariculture; public safety; education, particularly vocational education, and continuing responsiveness to health care needs, energy production, water systems and environmental problems.

Beginning in fiscal year 1990, OTIA will emphasize volunteer programs to augment technical assistance and will set aside an estimated $50,000 to support "volunteerism." Volunteerism has tremendous potential in the insular areas, where communities are small and extended families are ingrained in the social fabric and culture. Examples where volunteers could make a significant difference include teacher aids to improve education; recycling programs; community pride and beautification programs, such as "adopt-a-beach" or "adopt-a-road"; vocational training and education; small business advice development; and health care.

Increase for FY 1991

(dollars in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
($)	5,885	6,385	+500
(FTE-T)	(—)	(—)	(—)

Technical Assistance funds will partially be used to provide assistance to the insular governments (especially Guam and the Commonwealth of the Northern Mariana Islands) to mitigate the impact caused by the influx of Micronesians as a result of the implementation of the Compact of Free Association. Through the Technical Assistance application process, the insular governments may seek assistance to augment education programs, cultural adaptation programs, public health and public safety programs where there is a documented or obvious impact.

These funds will also partially be used to continue the programs of the Close Up Foundation ($710,000). This program has been extended to the insular areas for three years and has received enthusiastic support from the participating governments, teachers, and students. It is an integral element in furthering the Administration's education and stewardship goals.

OTIA will focus Technical Assistance funds at improving internal controls in the insular areas. The effort will match documented recommendations contained in audits with specific technical assistance projects designed to implement those recommendations.

The new level also includes an estimated $100,000, an increase of $50,000 over the base program, to promote volunteer programs in the insular areas. This program will begin in fiscal year 1990 and is described in the base program narrative.

Distribution of Change by Object Class

	Amount
Grants, subsidies and contributions	+$500,000

A summary of the technical assistance program funding since its inception in FY 1982 follows.

TECHNICAL ASSISTANCE
SUMMARY

January, 1982 through January, 1990

TERRITORY	FINANCE	HEALTH	ECONOMIC DEVELOPMENT	OPERATIONS/ MAINTENANCE	GOVERNMENT OPERATIONS	EDUCATION	TOTAL
MARSHALLS	758,944	337,800	501,530	20,000	837,550	175,000	2,630,824
PALAU	808,500	263,000	541,200	0	884,010	0	2,496,710
FSM	2,666,106	344,793	717,500	160,030	346,670	379,450	4,614,549
CNMI	759,500	712,600	494,800	115,000	293,500	22,800	2,398,200
GUAM	839,915	696,500	1,218,149	40,000	678,800	0	3,473,364
AMERICAN SAMOA	1,315,442	313,000	606,465	313,000	419,100	0	2,967,007
VIRGIN ISLANDS	2,015,932	130,000	1,323,250	0	331,478	0	3,800,660
GENERAL TTPI *	790,214	38,570	0	10,000	816,819	0	1,655,603
OTHER **	244,308	735,507	3,369,471	200,475	1,345,853	1,409,660	7,305,274
TOTAL	10,198,861	3,571,770	8,772,365	858,505	5,953,780	1,986,910	31,342,191

* TTPI Govt. projects benefiting FSM, RMI, & Palau

** Other projects through agreements with other agencies, direct procurements or other grants of benefit to multiple territorial areas.

Justification of Program and Performance

Activity: Territorial Administration
Subactivity: Guam Power Authority Loan Assistance

(dollar amounts in thousands)

Program		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from 1990	Inc. (+) Dec. (-) from base
Guam Power Authority Loan Assistance	($)	1,458	1,458	1,387	1,387	-71	—
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Total Requirements	($)	1,458	1,458	1,387	1,387	-71	—
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)

Impact of Public Law 99-177

		1990 Enacted to Date	P.L. 99-177 B.A. Reduction	1990 Adjusted Appropriation
Technical Assistance	($)	5,885	—	5,885
	(FTE-T)	(—)	(—)	(—)

Because the 1990 enacted appropriation level was within the Gramm-Rudman-Hollings Baseline Target, there is no B.A. reduction and, hence, no impact of the provisions of P.L. 99-177.

Authorization The Omnibus Territories Act of 1984 (P.L. 98-454, Section 203).

Objective To subsidize a $36 million loan to the Guam Power Authority (GPA) placed in 1980 by the Federal Financing Bank (FFB), to improve the operations of the Guam Power Authority to a level comparable to minimum industry standards; and to ensure the long-term viability and rate-setting independence of a Public Utilities Commission.

Base Program Section 203 of P.L. 98-454 provided that, subject to certain conditions, the FFB would, at the request of the GPA, repurchase the existing GPA note of December 31, 1980. Section 203 further authorized the Secretary of the Interior to pay the FFB the repurchase premium required to liquidate that existing note. The note was repurchased on December 3, 1984, with the cost of the premium totaling $4,750,554.29.

In addition, Section 203 authorizes the appropriation to the Secretary of the Interior of such sums as are necessary to pay to the FFB the interest rate differential between the seven percent rate to be paid by the GPA under the second refinancing agreement and the interest rate that would otherwise be determined in accordance with Section 6 of the Federal Financing Bank Act (12 U.S.C. 2285). An interest rate of 11.731 percent was in effect on the repurchase date of December 3, 1984.

The interest rate differential due from the Department of the Interior to the Federal Financing Bank for the life of the loan is as follows:

1985 - 1,328,766.16
1986 - 1,646,241.54
1987 - 1,605,550.39
1988 - 1,561,167.78
1989 - 1,505,174.13
1990 - 1,457,678.78
1991 - 1,386,494.73
1992 - 1,327,118.09
1993 - 1,259,127.14
1994 - 1,186,495.56
1995 - 1,108,659.94
1996 - 1,031,122.09
1997 - 934,171.60
1998 - 841,458.25
1999 - 739,472.15
2000 - 632,213.25
2001 - 511,301.17
2002 - 387,638.06
2003 - 284,892.02
2004 - 112,819.44

TOTAL INTEREST: $20,822,563.30

Increase/Decrease for FY 1991

(dollars in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
($)	1,387	1,387	—
(FTE-T)	(—)	(—)	(—)

There is no change proposed for FY 1991 from the FY 1991 Base. (The FY 1991 estimate changes from the FY 1990 estimate pursuant to the interest rate differential schedule shown above.)

Distribution of Change by Object Class

The object class detail for the proposed change is as follow:

	Amount
Grants, subsidies and contributions	$—

Justification of Program and Performance

Activity: Territorial Administration
Subactivity: Maintenance Assistance Fund

(dollar amounts in thousands)

Program		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from 1990	Inc. (+) Dec. (-) from base
Maintenance	($)	3,000	3,000	3,000	2,500	-500	-500
Assistance Fund	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)

Impact of Public Law 99-177

		1990 Enacted to Date	P.L. 99-177 B.A. Reduction	1990 Adjusted Appropriation
Maintenance Assistance	($)	3,000	—	3,000
Fund	(FTE-T)	(—)	(—)	(—)

Because the 1990 enacted appropriation level was within the Gramm-Rudman-Hollings Baseline Target, there is no B.A. reduction and, hence, no impact of the provisions of P.L. 99-177.

Authorization Public Law 96-597, section 601, authorized and urged the Secretary of the Interior to provide technical assistance in the form of "research, planning assistance, studies, and demonstration projects" to the territories through Departmental staff, reimbursements to other departments, grants, cooperative agreements, or "the employment of private individuals, partnerships, or corporations." (48 U.S.C. 1469(d).

Objective To provide a source of funds to encourage, through an equal matching requirement and after a baseline evaluation, the planning and implementation of proper and adequate maintenance programs for capital development programs in each of the territories.

Base Program The base program includes first year funding of the Maintenance Assistance Fund. A primary strategy of the program is to use these funds, with cost-sharing, to begin implementing the action plans and recommendations for improving infrastructure and O&M procedures in all the insular territories that are generated by the private contractor baseline evaluation. The baseline evaluation is being managed by the Department and funded through a combination of maintenance assistance and Technical Assistance funds with technical expertise from the U.S. Army Corps of Engineers - Pacific Ocean Division. A contract was awarded on December 8, 1989, to Lewis Berger International, Inc. in association with the Barrett Consulting Group, Inc. to perform this task. The evaluation is scheduled to begin in February 1990 and to be completed in the fall of 1990. In the interim, an initial commitment trip has been conducted through each of the territories and freely associated states by the Department and the Corps of Engineers and preliminary recommendations for O&M process-related projects are being formulated. These preliminary projects will be considered for funding via the Maintenance Assistance Fund in FY 1990, and the FY 1991 proposed funds will be used to begin funding O&M process-related improvements once the contractor baseline evaluation is completed.

Decrease from FY 1991 Base

(dollars in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
($)	3,000	2,500	-500
(FTE-T)	(—)	(—)	(—)

The proposed estimate for FY 1991 will fund the Operations and Maintenance Improvement program projects and action plans identified by the baseline evaluation which will be undertaken by a private contractor, under Department of the Interior supervision, during FY 1990. The decrease merely reflects a prudent use of Federal funds for FY 1991 while the baseline evaluation is being conducted and a more definitive listing of operations and maintenance needs can be developed from the action plans.

Distribution of Change by Object Class

	Amount
Grants, subsidies and contributions	-$500,000

Justification of Program and Performance

Activity: Territorial Administration
Subactivity: Drug Interdiction/Abuse Prevention Fund

(dollar amounts in thousands)

Subactivity		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from 1990	Inc. (+) Dec. (-) from base
Drug Interdiction/	($)	—	—	—	1,000	1,000	1,000
Abuse Prevention	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)

Impact of Public Law 99-177 (Not Applicable).

Authorization Anti-Drug Abuse Act of 1988 (Public Law 100-690).

Objective

— To promote regional initiatives to reduce transhipment of drugs between and through insular areas

— To augment local and other Federal funds in the insular areas

— To support local programs designed to educate the public about drug abuse and to increase enforcement capabilities in the insular governments

— To bring Federal law enforcement agents to the insular areas to help train local officials and to participate in cooperative enforcement programs.

Base Program In 1990, the insular areas will receive grants from other Federal agencies for education and enforcement programs. However, the level of assistance from these agencies was dramatically reduced by a reformulation of assistance in the Omnibus Drug Act of 1988. In 1990, OTIA will provide ad hoc funding specifically allocated to Guam, American Samoa and the Commonwealth of the Northern Mariana Islands ($975,000). This program restores some of the funding lost in the reformulation, but does not have the flexibility of this new budget line-item and corresponding program proposed for FY 1991.

Increase from FY 1991 Base

(dollars in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
($)	—	1,000	+1,000
(FTE-T)	(—)	(—)	(—)

For drug dealers and suppliers the insular areas are quite often not stopping points, but are very convenient transhipment points for movement of drugs to major population centers in the U.S. mainland. Their terrain, which includes beaches and jungles, makes them a natural target for small planes and boats to drop drug shipments. Small international airports with heavy tourism movement and understaffed or undertrained security personnel also are inviting to those who traffic in drugs.

The insular areas are thus a front-line defense to stop drug shipments into the U.S. mainland. Regional initiatives that are designed to improve communication and tracking of suspected individuals and transports can be very effective in reducing drug shipments. These types of regional programs can best be supported by cross-cutting funding such as this proposal.

Requested funds would also be used to increase training and to support and augment local programs, particularly those impacted by budget reductions in other Federal funding to the insular areas.

Distribution of Change by Object Class

	Amount
Grants, subsidies and contributions	+$1,000,000

Summary of Requirements by Object Class
(Dollar amounts in thousands)

Appropriation: Administration of Territories	1991 Base		1991 Estimate		Inc. (+) Dec. (-)	
	FTE	Amount	FTE	Amount	FTE	Amount
Object Class						
11. Personnel Compensation:						
11.1 Permanent positions - FTE-P	44	1,990	49	2,281	+5	+291
11.3 Positions other than permanent		100		100		—
11.5 Other personnel compensation	—	60	—	60	—	—
Total personnel compensation	44	2,150	49	2,441	+5	+291
Other Objects						
12.1 Personnel benefits		447		503		+56
21.0 Travel & transportation of persons		450		484		+34
22.0 Transportation of things		25		100		+75
23.1 Rental payments to GSA		370		390		+20
23.2 Other rent, comm., and utilities		180		230		+50
24.0 Printing and reproduction		25		25		—
25.0 Other services		808		815		+7
26.0 Supplies and materials		30		35		+5
31.0 Equipment		50		60		+10
41.0 Grants, subsidies & contributions		64,470		66,120		+1,650
Total requirements		69,005		71,203		+2,198

DEPARTMENT OF THE INTERIOR
OFFICE OF TERRITORIAL AND INTERNATIONAL AFFAIRS
ADMINISTRATION OF TERRITORIES

Program and Financing (in thousands of dollars)

14-0412-0-1-806	1989 actual	1990 estimate	1991 estimate
Program by activities:			
Direct Program:			
1. Guam:			
(a) Construction grants	4,900	—	2,500
(b) Special program grants	—	500	—
2. American Samoa:			
(a) Operations grants	20,654	20,850	21,000
(b) Construction grants	2,900	5,525	1,000
(c) Special program grants	—	350	—
3. Virgin Islands:			
(a) Construction grants	4,876	1,000	3,000
(b) Special program grants	1,500	—	—
4. Northern Mariana Islands:			
(a) Covenant grants	14,559	33,850	28,850
(b) Other Construction	10,000	—	—
(c) Special program grants	—	125	—
5. Territorial Administration:			
(a) Office of Territorial and International Affairs	2,969	2,946	3,581
(b) Technical Assistance	4,976	5,885	6,385
(c) Guam Power Authority Loan Assistance	1,505	1,458	1,387
(d) Maintenance Assistance Fund	—	3,000	2,500
(e) Brown Tree Snake	—	1,000	—
(f) Drug Interdiction/Abuse Prevention	—	—	1,000
Total direct program	68,839	76,489	71,203
Reimbursable program	1,597	2,000	2,000
10.00 Total obligations	70,436	78,489	73,203
Financing			
11.00 Off setting collections from Federal funds	—	-2,000	-2,000
21.40 Unobligated balance available start of year	-23,096	-47,210	-45,293
24.40 Unobligated balance available end of year	47,210	45,293	43,242
31.00 Redemption of debt	-1,783	1,917	2,051
Budget Authority:			
40.00 Appropriation	92,767	76,489	71,203

DEPARTMENT OF THE INTERIOR
OFFICE OF TERRITORIAL AND INTERNATIONAL AFFAIRS
ADMINISTRATION OF TERRITORIES

Program and Financing (in thousands of dollars)

14-0412-0-1-806	1989 actual	1990 estimate	1991 estimate
Relation of obligations to outlays:			
71.00 Obligations incurred, net	70,436	76,489	71,203
72.40 Obligated balance, start of year	47,279	47,628	39,827
74.40 Obligated balance, end of year	-47,628	-39,827	-42,200
77.00 Adjustments in expired accounts	-91	—	—
90.00 Outlays	69,996	84,290	68,830

DEPARTMENT OF THE INTERIOR
OFFICE OF TERRITORIAL AND INTERNATIONAL AFFAIRS
ADMINISTRATION OF TERRITORIES

Status of Direct Loans (in thousands of dollars)

14-0412-0-1-806	1989 actual	1990 estimate	1991 estimate
Addendum: Federal Financing Bank Transactions			
1410 Outstanding, start of year	58,677	56,894	54,977
1450 Repayments	-1,783	-1,917	-2,051
1490 Outstanding, end of year	56,894	54,977	52,926

DEPARTMENT OF THE INTERIOR
OFFICE OF TERRITORIAL AND INTERNATIONAL AFFAIRS
ADMINISTRATION OF TERRITORIES

Object Classification (in thousands of dollars)

14-0412-0-1-806	1989 actual	1990 estimate	1991 estimate
Direct Program:			
Personnel compensation			
11.1 Full-time permanent	1,880	1,980	2,281
11.3 Positions other than full-time	100	100	100
11.5 Other personnel compensation	60	60	60
11.9 Total personnel compensation	2,040	2,140	2,441
12.1 Personnel benefits: civilian	402	432	503
21.0 Travel and transportation of persons	380	450	484
22.0 Transportation of things	10	25	100
23.1 Rental payments to GSA	326	355	390
23.2 Communications, utilities and other rent	155	170	230
24.0 Printing and reproduction	20	25	25
25.0 Other services	640	670	815
26.0 Supplies and materials	30	30	35
31.0 Equipment	50	50	60
41.0 Grants, subsidies, and contributions	64,786	72,142	66,120
99.0 Subtotal, direct program	68,839	76,489	71,203
Reimbursable program:			
Personnel Compensation:			
11.1 Full-time	40	400	400
11.5 Other personnel compensation	50	50	50
11.9 Total Personnel compensation	450	450	450
12.1 Personnel benefits: civilian	10	10	10
21.0 Travel and transportation of persons	50	50	50
25.0 Other services	400	400	400
41.0 Grants, subsidies, and contributions	689	1,090	1,090
99.0 Subtotal, reimbursable programs	1,597	2,000	2,000
99.0 Total Obligations	70,436	78,489	73,203

DEPARTMENT OF THE INTERIOR
OFFICE OF TERRITORIAL AND INTERNATIONAL AFFAIRS
ADMINISTRATION OF TERRITORIES AND TRUST TERRITORY OF THE PACIFIC ISLANDS

Personnel Summary

14-0412-0-1-806	1989 actual	1990 estimate	1991 estimate
Direct:			
Total number of full-time positions:	44	44	49
Administration of Territories	(44)	(44)	(49)
Trust Territory of the Pacific Islands	(0)	(0)	(0)
Compact of Free Association	(0)	(0)	(0)
Total compensable workyears:			
Full-time equivalent employment	44	44	49
Full-time equivalent overtime	—	—	—
Reimbursable (Administration of Territories):			
Total number of full-time positions	3	3	3
Total compensable workyears:			
Full-time equivalent employment	1	1	1

Appropriation Summary Statement

Territorial and International Affairs

Appropriation: Trust Territory of the Pacific Islands

The FY 1991 budget for the Trust Territory of the Pacific Islands (TTPI) includes a minimum of operations needs and funding to pay remaining liabilities subsequent to the close-down of the Trust Territory government in Saipan. By Presidential Proclamation of November 3, 1986, the Federated States of Micronesia and the Republic of the Marshall Islands began a relationship of free association with the United States and the trusteeship ceased to be in effect for these two insular areas. Secretary Order No. 3119, issued on July 10, 1987, eliminated the Office of the High Commissioner and delegated all official remaining functions of the Trust Territory government to the Government of Palau or to the Assistant Secretary, Territorial and International Affairs. A transition office remains in Saipan to continue close-out of remaining Federal grants, to monitor ongoing construction project grants under the TTPI Capital Improvement Program (CIP), and to monitor activities taking place in the Republic of Palau.

The remaining unfunded liabilities of the Trust Territory government are legal liabilities, and include $10,500,000 to liquidate the existing cumulative deficit of the Trust Territory government, and $4,200,000 for payment to the Federated States of Micronesia, due to a damage claim in constructing the Kosrae airport.

The request assumes that the Compact of Free Association for the Republic of Palau will not be implemented by fiscal year 1991 due to Palau not having ratified the Compact in six attempts. For this very reason, Palau operations funding will remain under the Trust Territory of the Pacific Islands Appropriation.

Major activities of this appropriation are:

1. Trust Territory Operations/Deficit Elimination/Damage Claims. The Trust Territory government has been operating in a deficit situation since the early 1970s. Because of continuing no-year appropriations and the normal time-lag between obligations and outlays for the capital improvement program construction projects, the government was able to "float" the deficit by borrowing from the construction account to pay operating expenses. However, with the close-down of the Trust Territory government, and the completion of more of the capital improvement projects, the situation was becoming critical, and the Congress appropriated $8.5 million for FY 1988 to ensure that sufficient cash authority would be available in the U.S. Treasury to liquidate FY 1988 and some prior year obligations. However, at the request of the Department of the Interior and with approval from Congress, $3.5 million of the 1988 appropriation was subsequently reprogrammed to meet immediate government operation needs in Palau. An additional $3 million was appropriated in fiscal year 1990 to help offset the deficit.

However, the deficit will remain a problem for FY 1991. With the passage of time and closing out of more contracts, the situation will worsen until there are insufficient funds available in the TTPI account at the U.S. Treasury to pay all outstanding bills. Accordingly, the Department is requesting an appropriation of $10.5 million to clear all debts initiated by the Trust Territory Government.

As a result of dredging performed on an Interior-funded Kosrae airport project, a class action lawsuit has been filed against the U.S. Government. The lawsuit claims damage to a reef located in Kosrae State, within the Federated States of Micronesia. Erosion is washing away shoreline property belonging to the village and damage is continuing.

During a recent meeting attended by counsel for the claimants and attorneys for the Justice Department a settlement process was established. Under the terms of the settlement, the Justice Department will pay individual damage claims (for property loss) from the judgement fund. The U.S. Army Corps of Engineers, by mutual agreement, has evaluated the dredge-site problem and recommended a solution. The Corps' report has describes four options to repair the dredge site. The plantiffs have agreed to settle for $4.2 million in order to restore the beach to its previous condition, as estimated by the Corps' report.

2. Palau Operations. The fiscal year 1991 budget request for the Trust Territory of the Pacific Islands is predicated on the assumption that the Palau Compact is not going to be implemented in the near future since Palau has not ratified the Compact in six attempts. Because of this assumption, Palau operational funding will remain within this appropriation. This request includes funding for Palau's costs associated with satellite communications and Palau's share of support for operations of the College of Micronesia.

Appropriation Language Sheet

DEPARTMENT OF THE INTERIOR
TERRITORIAL AND INTERNATIONAL AFFAIRS

TRUST TERRITORY OF THE PACIFIC ISLANDS

For expenses necessary for the Department of the Interior in administration of the Trust Territory of the Pacific Islands pursuant to the Trusteeship Agreement approved by joint resolution of July 18, 1947 (61 Stat. 397), and the Act of June 30, 1954 (68 Stat. 330), as amended (90 Stat. 299; 91 Stat. 1159; 92 Stat. 495); grants to the Trust Territory of the Pacific Islands, in addition to local revenues, for support of governmental functions; [$33,339,000] $30,600,000 to remain available until expended, including [$3,000,000] $10,500,000 to reduce the accumulated deficit of the former Trust Territory Government and $4,200,000 for settlement purposes related to reef and beach damage on Kosrae Island resulting from airport construction: Provided that all financial transactions of the Trust Territory, including such transactions of all agencies or instrumentalities established or utilized by such Trust Territory, shall be audited by the General Accounting office in accordance with chapter 35 of title 31, United States Code: Provided further, That the government of the Trust Territory of the Pacific Islands is authorized to make purchases through the General Services Administration: Provided further, That all Government operations funds appropriated and obligated for the Republic of Palau under this account for fiscal year [1990] 1991, shall be credited as an offset against fiscal year [1990] 1991 payments made pursuant to the legislation approving the Palau Compact of Free Association (Public Law 99-658), if such Compact is implemented before October 1, [1990] 1991: Provided further, That [any unobligated balances for Palau government operations that remain available on the date of Compact implementation shall be used by the Department of the Interior to reduce the accumulated deficit of the Trust Territory Government] not less than $300,000 of the grants to the Republic of Palau, for support of governmental functions, shall be dedicated to the college of Micronesia in accordance with the agreement between the Micronesian entities. (Department of the Interior and Related Agencies Appropriations Act, 1990.)

Justification of Proposed Language Changes

Trust Territory of the Pacific Islands

1. Addition: "...to remain available until expended,"

   To provide no-year funding for this appropriation which is customary. Such language was omitted in the FY 1990 appropriation act through an oversight.

2. Addition: "...and $4,200,000 for settlement purposes related to reef and beach damage on Kosrae Island resulting from airport construction."

   To provide funding for damage claims to settle a lawsuit against the U.S. Government claiming damage to the reef and beach on Kosrae. The damage was a result of dredging performed to provide fill for an Interior-funded airport project.

3. Deletion: "...any unobligated balances for Palau government operations that remain available on the date of Compact implementation shall be used by the Department of the Interior to reduce the accumulated deficit of the Trust Territory Government."

   This language is no longer necessary given the budget request, which included direct appropriations to liquidate the balance of the deficit.

4. Addition: "...not less than 300,000 of the grants to the Republic of Palau, for support of governmental functions, shall be dedicated to the college of Micronesia in accordance with an agreement between the Micronesian entities."

   Prior to Compact implementation, the College of Micronesia received direct grants from the Trust Territory government to subsidize general operations. Since Compact implementation, this grant has been limited to a pro-rata share, representing only Palau's portion of college operating costs. The freely associated states are expected to fund the balance from Compact funds. OTIA is now proposing that Palau's share be made a part of Palau's operating budget, rather than be provided directly from the Department of the Interior (Trust Territory Office of Transition). This change is important to incorporate support for the College into Palau's base budget. The proposed language, however, ensures the Federal government that the funds will be used for the college and not for other purposes.

Appropriation Language Citations

Territorial and International Affairs

Appropriation: Trust Territory of the Pacific Islands

1. For expenses necessary for the Department of the Interior in administration of the Trust Territory of the Pacific Islands pursuant to the Trusteeship Agreement approved by joint resolution of July 18, 1947 (61 stat. 397), and the Act of June 30, 1954 (68 stat. 330) as amended (90 stat. 299; 91 stat. 1159; 92 stat. 495), grants to the Trust Territory of the Pacific Islands ,in addition to local revenues, for support of governmental functions; [$33,339,000] $30.600.000 to remain available until expended. including [$3,000,000] $10.500.000 to reduce the accumulated deficit of the former Trust Territory Government; and $4.2[illegible].000 for settlement purposes related reef and beach damages on Kosrae Island resulting from airport construction.

48 U.S.C. 1681 (note)

48 U.S.C. 1681 (note) provides that "There is authorized to be appropriated for fiscal years after fiscal year 1980, such sums as may be necessary,..."

2. Provided, That all financial transactions of the Trust Territory, including such transactions of all agencies or instrumentalities established or utilized by such Trust Territory, shall be audited by the General Accounting Office in accordance with chapter 35 of title 31, United States Code:

48 U.S.C. 1683

48 U.S.C. 1683 provides that "All financial transactions of the Trust Territory, including such transactions of all agencies or instrumentalities established or utilized by such Trust Territory, shall be audited by the General Accounting Office in accordance with the provisions of the Budget and Accounting Act, 1921 (42 Stat.23), as amended [3 U.S.C.A. et seq.], and the Accounting and Auditing Act of 1950 (64 Stat. 834) [31 U.S.C.A. 65 et seq.]

3. Provided further, That the government of the Trust Territory of the Pacific Islands is authorized to make purchases through the General Services Administration.

48 U.S.C. 1682

48 U.S.C. 1682 provides that "The government of the Trust Territory of the Pacific Islands is authorized to make purchases through the General Services Administration."

Summary of Requirements

Appropriation: Trust Territory of the Pacific Islands

	($ in thousands)			
	FTE-T	Amount	FTE-T	Amount
Appropriation enacted, 1990			0	$33,339
Reduction pursuant to P.L. 99-177			0	-412
Adjusted FY 1990 Appropriation			0	$32,927
Adjustments to base:				
Adjustment for 1990 Impact of P.L. 99-177	0	412		
Other Increases and/or Decreases				
Adjustment for Construction Projects Fully-funded in Prior Years:				
— Capital Improvement Program (CIP) Deficiencies	0	-14,206		
Net, Other Increases and/or Decreases			0	-14,206
Total, adjustments to base			—	13,794
1991 Base Budget			0	19,133
Program changes (changes to base budget, detailed below)			0	11,467
Total Requirements (1991 Estimate)			0	30,600

Comparison by Activity/Subactivity

	1989 Actual		1990 Enacted to Date		P.L. 99-177 Reduction	1990 Adjusted Appropriation	1991 Base		1991 Estimate		Increase (+) or Decrease (-) from 1990 Appropriation		Increase (+) or Decrease (-) from 1990 Adjusted Appropriation	Increase (+) or Decrease (-) from 1991 Base	
	FTE-T	Amount	FTE-T	Amount	Amount	Amount	FTE-T	Amount	FTE-T	Amount	FTE-T	Amount		FTE-T	Amount
1. Trust Territory Operations:															
Trust Territory Admin.	—	400	—	800	-10	790	—	800	—	800	—	—	+10	—	—
College of Micronesia	—	300	—	300	-4	296	—	300	—	—	—	-300	-296	—	-300
Satellite Communications	—	150	—	133	-2	131	—	133	—	—	—	-133	-131	—	-133
Deficit Elimination	=	=	=	1,000	-37	2,963	=	1,000	=	10,500	=	+7,500	+7,537	=	+7,500
Subtotal	—	850	—	4,233	-53	4,180	—	4,233	—	11,300	—	+7,067	+7,120	—	+7,067
2. Republic of Palau Operations	—	14,500	—	14,900	-184	14,716	—	14,900	—	15,100	—	+200	+384	—	+200
3. Trust Territory Construction: Capital Improvements	—	—	—	—	14,206	-176	—	14,030	—	—	—	—	—	—	—
4. Indefinite Land Use Claims	—	2,780	—	—	—	—	—	—	—	—	—	—	—	—	—
5. Micronesian War Claims	—	10,304	—	—	—	—	—	—	—	—	—	—	—	—	—
6. Damage Claims (Pomres)	=	=	=	=	=	=	=	=	=	4,200	=	+4,200	+4,200	=	+4,200
TOTAL, TRUST TERRITORY OF THE PACIFIC ISLANDS	=	28,434	=	33,339	-412*	32,927*	=	19,133	=	30,600	=	+11,467	+11,704	=	+11,467

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* Totals may not be equal to the sum of individual line-items due to rounding.

Justification of Base Adjustments

Trust Territory of the Pacific Islands

	FTE	Amount ($000)
Adjustment for 1990 Impact of P.L. 99-177.......	—	+$ 412
The Balanced Budget and Emergency Deficit Control Act of 1985 (P.L. 99-177), as amended, required a reduction in non-exempt programs in FY 1990. Since the reduction applies to FY 1990 only, this adjustment is made to restore programs to their full-funding level.		
One-time decreases for construction and/or Special Program Grants which were fully funded in a prior year:		
Trust Territory Construction		
Capital Improvement Program (CIP) Deficiencies	—	-$14,206
The decrease reflects full funding to correct identified deficiencies in the Micronesian capital infrastructure development program.		

Activity Summary

Appropriation: Trust Territory of the Pacific Islands

(dollar amounts in thousands)

Activity		FY 1989 Actual	FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from Base
Trust Territory Operations	($)	850	4,233	4,180	4,233	11,300	+7,067
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Republic of Palau Operations	($)	14,500	14,900	14,716	14,900	15,100	+200
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Trust Territory Construction	($)	—	14,206	14,030	—	—	—
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Micronesian War Claims	($)	10,304	—	—	—	—	—
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Damage Claims (Kosrae)	($)	—	—	—	—	4,200	+4,200
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Indefinite Land Use Claims Settlement	($)	2,780	—	—	—	—	—
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Total	($)	28,434	33,339	32,927*	19,133	30,600	+11,467
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)

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* Numbers may not add due to rounding.

Justification of Program and Performance

Activity: Trust Territory Operations

(dollar amounts in thousands)

Subactivity		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from Base
Trust Territory General Administration	($) (FTE-T)	800 (—)	790 (—)	800 (—)	800 (—)	— (—)
Deficit Elimination	($) (FTE-T)	3,000 (—)	2,963 (—)	3,000 (—)	10,500 (—)	+7,500 (—)
Total Requirements	($) (FTE-T)	3,800 (—)	3,753 (—)	3,800 (—)	+11,300 (—)	+7,500 (—)

Following the issuance of Secretary's Order 3039 in April 1979, the Trust Territory Government began a gradual phasedown and most administrative responsibilities of government were turned over to three new constitutional governments formed by the Micronesian entities. By July 1987, two of those entities had entered into a Compact of Free Association with the United States. A new Secretary's Order 3119 was issued, delegating even greater authority to the only entity remaining under trusteeship, the Republic of Palau, and abolishing the Office of the High Commissioner. Remaining administrative authority and trusteeship responsibilities were transferred to the Assistant Secretary for Territorial and International Affairs. A small group of non-Federal, contracted Trust Territory Government employees was retained to help close out Federal grant programs; oversee completion of the capital improvement program; monitor continuing grants to Palau; and perform other miscellaneous administrative functions, such as preparing annual reports to the United Nations Trusteeship Council. This group was designated as the Trust Territory Office of Transition. All of these actions were predicated on an assumption of imminent implementation of the Compact of Free Association for Palau. This assumption was reflected in budget requests and other policy and administrative actions.

Now, more than two years later, Palau appears to be no closer to Compact implementation than it was in July 1987. In the interim, problems associated with self-government in Palau have developed, such that the Department believes that greater oversight of Palau is necessary. This is reflected in the appropriation where the Department is proposing sufficient funding to retain existing transition staff through fiscal year 1991. Estimates also include continuing operational support for the Palau government under trusteeship. This policy change is also reflected in the Administration of Territories appropriation, where the Department is seeking additional funding and FTEs to reinstate a Federal involvement in Palau oversight. The policy change is also reflected in the Compact of Free Association appropriation, where the Department is no longer assuming or budgeting for Compact implementation, although the Department has accommodated the possibilities of Compact implementation on a contingency basis.

Final funding for the Trust Territory deficit is also being requested in FY 1991. The Trust Territory has operated in a deficit situation since the early 1970s. Because of continuing no-year appropriations and the normal lag-time between obligations and outlays for construction projects, the Government was able to "float" the deficit by borrowing from the construction account to pay operating expenses. However, with the completion of all the capital improvement projects near at hand, there are insufficient cash balances to cover all unliquidated obligations. These balances will come due during FY 1991. The $10.5 million now being requested will fully liquidate the existing debts of the former Trust Territory Government.

Justification of Program and Performance

Activity: Trust Territory Operations
Subactivity: Trust Territory Administration

(dollar amounts in thousands)

Program		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from 1990	Inc. (+) Dec. (-) from base
Trust Territory	($)	800	790	800	800	—	—
Administration	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Total	($)	800	790	800	800	—	—
Requirements	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)

Impact of Public Law 99-177

		1990 Enacted to Date	P.L. 99-177 B.A. Reduction	1990 Adjusted Appropriation
Trust Territory	($)	800	-10	790
Administration	(FTE-T)	(—)	(—)	(—)

The Trust Territory Transition Office operations grant will be reduced by $10,000, which will constrain office administrative expenses and travel.

Authorization P.L. 83-451, an Act to Provide for the Continuance of Civil Government for the Trust Territory of the Pacific Islands, as amended by P.L. 95-134 (Sec. 101a), P.L. 95-348 (Section 8), and P.L. 96-205 (Section 101), Section 2; 48 U.S.C. 1681 note, Grants-Operations.

Objectives

- To fulfill the remaining United States obligations and responsibilities under the U.N. Trusteeship Agreement, consistent with existing treaties, laws, and regulations of the United States generally applicable in the Trust Territory.
- To provide executive direction and administrative control over Trust Territory Administration programs, including those operating within the jurisdiction of Micronesian governments.

Base Program This program provides funding to maintain a transition office in Saipan and a field representative in Palau, with responsibility to oversee completion of construction grants in Micronesia, monitor and administer operations grants to Palau, prepare annual reports to the United Nations Trusteeship Council, maintain administrative files and records, and advise the Assistant Secretary and other Departmental officials on issues in the Trust Territory.

Increase/Decrease from FY 1991 Base

(dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
($)	800	800	—
(FTE-T) *	(—)	(—)	(—)

* Federal employees only

There is no change proposed from the 1991 Base Budget.

The FY 1991 estimates will provide funding for trusteeship administration through fiscal year 1991. It includes continuation of all functions described in the base budget, and sufficient funding to create an "ad hoc" High Court if a situation demands it. The Trust Territory High Court is still legally constituted, but currently has no workload and no staff.

Distribution of Change by Object Class

	Amount
Grants, subsidies, and contributions	—

Justification of Program and Performance

Activity: Trust Territory Operations
Subactivity: College of Micronesia

(dollar amounts in thousands)

Program		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from base
College of Micronesia	($)	300	296	300	—	-300
	(FTE-T)	(—)	(—)	(—)	(—)	(—)
Total Requirements	($)	300	296	296	—	-300
	(FTE-T)	(—)	(—)	(—)	(—)	(—)

Impact of Public Law 99-177

		1990 Enacted to Date	P.L. 99-177 B.A. Reduction	1990 Adjusted Appropriation
College of Micronesia	($)	300	-4	296
(Palau's share)	(FTE-T)	(—)	(—)	(—)

The $4,000 reduction to the College Operations funding will be absorbed by administrative cost reductions and improved efficiency.

Authorization P.L. 83-451, an Act to Provide for the Continuance of Civil Government for the Trust Territory of the Pacific Islands, as amended by P.L. 95-134 (Sec. 101a), P.L. 95-348 (Section 8), and P.L. 96-205 (Section 101), Section 2; 48 U.S.C. 1681 note, Grants-Operations.

Objectives

- To provide accredited postsecondary degree and certification programs in subject areas relevant to the needs of Palau and its people.
- To implement integrated academic and administrative procedures for the Micronesian Occupational College in Palau.
- To increase the financial self-sufficiency of the College.

Base Program The College of Micronesia services all Micronesians from the Federated States of Micronesia, the Republic of the Marshall Islands, and the Republic of Palau. The College serves as a major unifying force within Micronesia for the betterment of education, cooperation, and communications of all Micronesians. The College consists of three campuses, the School of Nursing on Majuro, the Community College of Micronesia on Pohnpei, and the Micronesian Occupational College on Palau. All of the campuses have been accredited by the United States Western Association of Schools and Colleges.

The School of Nursing provides instruction, using the Learning Experience Guide for Students, leading to an Associate Degree in Nursing. The Associate Degree in Nursing program is fully accredited and qualifies graduates to sit for the Guam Nursing Board Examinations.

The Community College of Micronesia provides instruction leading to an Associate Degree or Certificate in the fields of Education, Special Education, Business Management, Liberal Arts, and Pre-Nursing.

The Micronesian Occupational College provides instruction leading to a Vocational Diploma or Associate Degree in eighteen specific vocational fields and will provide instruction leading to a Vocational Certificate in four specific vocational fields.

The College of Micronesia is also supported by tuition payments from Basic Educational Opportunity Grants to Micronesian students. These grants are dependent upon the number of eligible students and the continued accreditation of the College.

The FY 1991 base reflects a restoration of the Gramm-Rudman-Hollings sequestration for FY 1990 to fund Palau's pro-rata share of the cost of operations of the college. The freely associated states of the Federated States of Micronesia and the Republic of the Marshall Islands pay their pro-rata share of costs for the college out of Compact funds.

Decrease from FY 1991 Base

(dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
($)	300	—	-300
(FTE-T)	(—)	(—)	(—)

The proposed reduction reflects the transfer of this budget line-item to the Republic of Palau Operations account within this appropriation in order to consolidate all operational-related funding for Palau, and in keeping with the intent of Secretary of the Interior Order No. 3039 delegating authority to Palau for directly managing its own affairs.

Justification of Program and Performance

Activity: Trust Territory Operations
Subactivity: College of Micronesia

(dollar amounts in thousands)

		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from base
Satellite	($)	133	131	133	—	-133
Communications	(FTE-T)	(—)	(—)	(—)	(—)	(—)
Total	($)	133	131	133	—	-133
Requirements	(FTE-T)	(—)	(—)	(—)	(—)	(—)

Impact of Public Law 99-177

		1990 Enacted to Date	P.L. 99-177 B.A. Reduction	1990 Adjusted Appropriation
Satellite Communication	($)	133	-2	131
(Palau's share)	(FTE-T)	(—)	(—)	(—)

The impact of the Gramm-Rudman-Hollings sequestration is significant in that it will exacerbate Palau's existing cash flow problems. With the per channel lease rates having increased by mandate from the Federal Communications Corporation (FCC), the Palau National Communications Corporation (PNCC), a fiscally sound semi-autonomous agency, will have to assume even more of the financial responsibility for Palau's telecommunications costs.

Authorization P.L. 83-451, an Act to Provide for the Continuance of Civil Government for the Trust Territory of the Pacific Islands, as amended by P.L. 95-134 (Sec. 101a), P.L. 95-348 (Section 8), and P.L. 96-205 (Section 101), Section 2; 48 U.S.C. 1681 note, Grants-Operations.

Objectives

- To provide for the operations, maintenance, and space segment costs for the "Standard B" satellite terminal located in the Republic of Palau.

Base Program In order to promote effectively the social, economic, and political development of the Trust Territory, a modern and efficient communications system became necessary. A satellite communications system best met this need in Micronesia, because of the vast expanses of ocean between major islands. Contracts were negotiated and signed between COMSAT and the Republic of the Marshall Islands, which provided for the installation of "Standard B" satellite terminals. The agreements called for a total of seven terminals each satellite terminal are approximately $125,000. Spare parts and equipment cost approximately $8,000 per station annually.

During 1990, the Republic of Palau, through the PNCC, entered into an agreement with Communications Satellite Corporation and the Hawaiian Telephone Authority (HAWTEL) to have Palau purchase the satellite terminal in Palau and have it operated and maintained by HAWTEL. Implementation of the agreement is pending clearance by the Department and the FCC.

The FY 1991 budget request reflects space segment and spare parts and equipment costs only for the satellite terminal located in the Republic of Palau. Funding for the satellite terminals located in the Federated States of Micronesia and the Republic of the Marshall Islands is provided under the Compact of Free Association.

Decrease from FY 1991 Base

(dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
($)	133	—	-133
(FTE-T)	(—)	(—)	(—)

The proposed reduction reflects the transfer of this budget line-item to the Republic of Palau Operations account within this appropriation in order to consolidate all operational-related funding for Palau, and in keeping with the intent of Secretary of the Interior Order No. 3039 delegating authority to Palau for directly managing its own affairs.

Justification of Program and Performance

Activity: Trust Territory Operations
Subactivity: Deficit Elimination

(dollar amounts in thousands)

Program		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from 1990	Inc. (+) Dec. (-) from base
Deficit Elimination	($) (FTE-T)	3,000 (—)	2,963 (—)	3,000 (—)	10,500 1/ (—)	+7,500 (—)	+7,500 (—)
Total Requirements	($) (FTE-T)	3,000 (—)	2,963 (—)	3,000 (—)	10,500 1/ (—)	+7,500 (—)	+7,500 (—)

Impact of Public Law 99-177

		1990 Enacted to Date	P.L. 99-177 B.A. Reduction	1990 Adjusted Appropriation
Deficit Elimination	($) (FTE-T)	3,000 (—)	-37 (—)	2,963 (—)

The reduction imposed by the Gramm-Rudman-Hollings sequestration will exacerbate the deficit situation of the former Trust Territory Government; the Trust Territory transition office in Saipan will attempt to accommodate the reduction by using any and all available CIP contingency funds which remain unused for the CIP Program.

Authorization P.L. 83-451, an Act to Provide for the Continuance of Civil Government for the Trust Territory of the Pacific Islands, as amended by P.L. 95-134 (Sec. 101a); P.L. 95-348 (Section 8), P.L. 96-205 (Section 101), Section 2; 48 U.S.C. 1681 note, Grants-Operations; P.L. 99-239, the Compact of Free Association Act of 1985 (Section 105(j)); and P.L. 99-658, the Compact of Free Association for the Republic of Palau. (Section 102(b)).

Objectives

- To eliminate the cumulative deficit of the Trust Territory government.

1/ Includes restoration of $3.5 million appropriated for the deficit but reprogrammed to Palau operations account.

Base Program

As a result of poor administrative practices and unbudgeted cost overruns, the Trust Territory government has been operating in a deficit situation since the early 1970s. Because of a continuing no-year appropriation and the normal time-lag between obligations and outlays for the capital improvement programs, the Government was able to "float" the deficit by borrowing from the construction account to pay operating expenses. However, with the completion of all the capital improvement projects near at hand, there are insufficient cash balances to cover all unliquidated obligations. These balances will come due during 1991.

The base budget reflects a 1990 appropriation of $3 million to apply to a total cumulative deficit of $18.5 million. $8.5 million was appropriated for deficit elimination in fiscal year 1988, although $3.5 million of this amount was reprogrammed for emergency operational assistance to Palau. Thus $8 million is currently available to apply against the $18.5 million deficit and $10.5 million remains unfunded.

Increase from FY 1991 Base

(dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
($)	3,000	10,500	+7,500
(FTE-T)	(—)	(—)	(—)

The proposed increase will provide sufficient funds to fully liquidate the existing deficit.

Distribution of Change by Object Class

	Amount
Grants, subsidies, and contributions	+$7,500,000

Justification of Program and Performance

Activity: Trust Territory Operations
Subactivity: Palau Operations

(dollar amounts in thousands)

Program		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from 1990	Inc. (+) Dec. (-) from base
Palau	($)	14,900	14,716	14,900	15,100	+200	+200
Operations	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Total	($)	14,900	14,716	14,900	15,100	+200	+200
Requirements	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)

Impact of Public Law 99-177

		1990 Enacted to Date	P.L. 99-177 B.A. Reduction	1990 Adjusted Appropriation
Palau Operations	($)	14,900	-184	14,716
	(FTE-T)	(—)	(—)	(—)

The Gramm-Rudman-Hollings sequestration will exacerbate Palau's already serious cash flow position. The Department is proposing a restoration of this reduction as a base adjustment in this budget.

Authorization P.L. 83-451, an Act for the Continuance of Civil Government for the Trust Territory of the Pacific Islands, as amended by P.L. 95-134 (Section 101a), P.L. 95-348 (Section 8), and P.L. 96-205 (Section 101), Section 2; 48 U.S.C. 1681 Note, Grants-Operations.

Objective

— To provide basic social, political and economic development programs to serve the people of Palau.

— To develop a viable economic base, largely supported by the private sector and not the government or other outside grants.

— To conduct necessary governmental operations for the people of Palau, to enhance their quality of life and preserve their basic rights.

Base Program The national government of Palau is the major supplier of essential services to the population of approximately 15,000. These essential services include health, education, protection of property and life, power, water and communications. The national government is the largest single employer in Palau, and financing the operations of the government is a major concern. Total government revenues are comprised of grants from the Department of the Interior, grants from other federal agencies, and taxes and other receipts collected locally.

The base program is predicated on an adjustment for FY 1991 of $184,000 to restore the Gramm-Rudman-Hollings sequestration for FY 1990. In 1988, the Federal subsidy to government operations was raised from a level of approximately $11 million annually to the current level of $14,700. This appears to have stabilized Palau's operational crises, although fundamental problems such as the power plant debt and inadequate internal controls have not been fully resolved. Through the technical assistance program, some of the control problems are being mitigated. Helping Palau get better control of its finances and operational practices is a major objective of the new base program, so that Palau will be ready for total self-government when the Compact is finally implemented.

Increase from FY 1991 Base

(dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
($)	14,900	15,100	+200
(FTE-T)	(—)	(—)	(—)

The proposed increase from the base budget is to continue to fund Palau operations at about the current level until the Compact of Free Association is implemented. The proposed increase over the base program level is also to transfer the responsibility and funding for Palau's share of support for the College of Micronesia from the Trust Territory Administration account to the Operations account. This is a small step in advancing self-government because it requires Palau to build this support of the college into their local appropriation process and base. Similarly, OTIA is no longer budgeting for satellite communications within the Trust Territory Administration account. This is a responsibility that should be carried by Palau. The Palau National Communications Corporation has sufficient revenues to pay this cost and incorporate it into their rate structure. This stipulation will be made a condition of the grant.

Distribution of Change by Object Class

	Amount
Grants, subsidies and contributions	+$200,000

Justification of Program and Performance

Activity: Damage Claims
Subactivity: (Kosrae)

(dollar amounts in thousands)

Program		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from 1990	Inc. (+) Dec. (-) from base
Damage Claims	($)	—	—	—	4,200	+4,200	+4,200
(Kosrae)	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Total	($)	—	—	—	4,200	+4,200	+4,200
Requirements	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)

Impact of Public Law 99-177

		1990 Enacted to Date	P.L. 99-177 B.A. Reduction	1990 Adjusted Appropriation
Damage Claims (Kosrae)	($)	—	—	—
	(FTE-T)	(—)	(—)	(—)

Since this is a new budget line-item proposed for FY 1991, there was no impact from P.L. 99-177.

Authorization P.L. 83-451, an Act to Provide for the Continuance of Civil Government for the Trust Territory of the Pacific Islands, as amended by P.L. 95-134 (Sec. 101a), P.L. 95-348 (Section 8), and P.L. 96-205 (Section 101), Section 2; 48 U.S.C. 1681 note, Grants-Operations.

Objectives

— To fund the settlement agreement with Kosrae state for damages sustained from Interior-funded capital improvement projects.

Base Program

A class action suit has been filed against the U.S. Government claiming damage to a reef in Kosrae State within the Federated States of Micronesia, as a result of dredging performed to provide fill for an Interior-funded airport. Erosion is washing away shoreline property belonging to a village and damage is continuing. In meetings attended by counsel for the claimants and attorneys for the Justice Department (along with Interior, State Department and OMB representatives), a settlement process was established. Under the terms of the settlement, the Justice Department will pay individual damage claims (for property loss) from the judgement fund. The U.S. Army Corps of Engineers, by mutual agreement, evaluated the erosion problem and suggested corrective action and associated cost estimates. The plaintiffs have agreed to a final settlement of $4.2 million to restore the beach to its prior condition.

Increase from FY 1991 Base

(dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
($)	—	4,200	4,200
(FTE-T)	(—)	(—)	(—)

This funding will be used in full and final settlement of the plaintiff's claims against the United States. As part of the settlement agreement, the U.S. has agreed to include a request for appropriation of $4.2 million to fund the settlement agreement.

Distribution of Change by Object Class

	Amount
25.0 Other services	+$4,200,000

DEPARTMENT OF THE INTERIOR
OFFICE OF TERRITORIAL AND INTERNATIONAL AFFAIRS
TRUST TERRITORY OF THE PACIFIC ISLANDS

Program and Financing (in thousands of dollars)

14-0414-0-1-806	1989 actual	1990 estimate	1991 estimate
Program by activities:			
Direct Program:			
1. Trust Territory operations	893	1,218	800
2. Republic of Palau operations	14,500	14,716	15,100
3. Micronesian War Claims	19,874	—	—
4. Trust Territory construction:			
(a) Capital Improvements	—	14,030	—
5. Bikini Support	1,000	—	—
6. Deficit Elimination	—	2,963	10,500
7. Indefinite Land Use Claims Settlement	2,780	—	—
8. Damage Claims (Kosrae)	—	—	4,200
Total, direct program	39,047	32,927	30,600
10.00 Total obligations	39,047	32,927	30,600
Financing:			
17.00 Recovery of Prior Year obligations	-431	—	—
21.40 Unobligated balance available, start of year	-57,415	-47,233	-47,233
24.40 Unobligated balance available, end of year	47,233	47,233	47,233
39.00 Budget Authority	28,434	32,927	30,600
Budget Authority:			
40.00 01 Budget Authority (Appropriation)	28,434	33,339	30,600
40.00 90 Reduction pursuant to P.L. 99-177	—	-412	—
43.00 01 Appropriation (adjusted)	28,434	32,927	30,600
Relation of obligations to outlays:			
71.00 Obligations incurred, net	39,047	32,927	30,600
72.40 Obligated balance, start of year	19,567	11,804	11,149
74.40 Obligated balance, end of year	-11,804	-11,149	-10,537
78.00 Adjustments in unexpired accounts	-431	—	—
90.00 Outlays	46,379	33,582	31,212

DEPARTMENT OF THE INTERIOR
OFFICE OF TERRITORIAL AND INTERNATIONAL AFFAIRS
TRUST TERRITORY OF THE PACIFIC ISLANDS

Object Classification (in thousands of dollars)

14-0414-0-1-806		1989 actual	1990 estimate	1991 estimate
Direct Program:				
25.00	Other services	—	—	4,200
41.00	Grants, subsidies, and contributions	39,047	32,927	26,400
99.00	Total obligations	39,047	32,927	30,600

Appropriation Summary Statement

Territorial and International Affairs

Appropriation: Compact of Free Association

The FY 1991 budget for the Compact of Free Association includes fifth-year funding for the freely associated state governments of the Republic of the Marshall Islands and the Federated States of Micronesia (FSM). First-year funding of the Compact of Free Association was appropriated in the FY 1986 Urgent Supplemental Act (P.L. 99-349) and carried over into FY 1987 pursuant to P.L. 99-591. Second-year funding was appropriated in FY 1988. First-year funding for the Compact of Free Association for the Republic of Palau (P.L. 99-658) was also appropriated in P.L. 99-349, and will remain available until such time as the Palau Compact is implemented.

The Compact of Free Association Act of 1985 (P.L. 99-239) defines the relationships between the United States and the freely associated states of the Marshall Islands and the FSM. Under the Compact, the United States is granted full powers and authority for defense and security matters, including the right to establish military bases and support activities, throughout the freely associated states. In return, the United States will provide annual financial assistance to these two freely associated states over a fifteen-year period. The average annual amount of this assistance over this period is approximately $155 million. Of this amount, an annual average of 12 percent will be devoted to the financing of federal services with the remainder to be provided directly to each of the freely associated state governments for their use.

Similarly, the Compact of Free Association for Palau (P.L. 99-658), as well as Public Law 101-219, defines the relationship between the United States and the freely associated state of Palau, that will come into force after the Compact is legally approved by the people of Palau in accordance with their Constitution. Under that Compact, the United States will provide annual financial assistance for a fifteen-year period, although the agreement extends for fifty years. The average annual amount of this assistance is $30 million.

The total cost of the Marshalls and FSM Compact in FY 1991 is estimated to be $165,938,000. Of this total, $148,238,000 carries the full faith and credit of the United States and is estimated for permanent indefinite appropriation. The remainder of $17,700,000 is requested in current authority, and is justified in this budget.

In this budget, the Department has included an additional $1,500,000 for programs related to first-year implementation of the Compact for the Republic of Palau. These funds are authorized in Public Law 101-219, and the Administration has agreed to support this funding as part of the legislation to implement the Palau Compact. This sum is comprised of $800,000 for a new prison, $400,000 for drug interdiction efforts, and $300,000 for a Public Auditor and a Special Prosecutor. These funds, coupled with the $9,340,000 in first-year current account funds already appropriated, will only be obligated after the Compact is legally approved by the people of Palau in accordance with the requirements of the Palau Constitution and Public Law 101-219.

Major activities of this appropriation are:

1. Federal Services Assistance (Current Appropriation). This assistance is provided under the authority of Section 122, 221, 223, 232, and 233 of the FSM and Marshalls Compact, and Sections 221, 223, 232, and 233 of the Palau Compact. Section 122 provides for the training of diplomats from the freely associated states at the Foreign Service Institute of the Department of State. Section 221 stipulates program assistance to the Federated States of Micronesia and the Republic of the Marshall Islands. The assistance has included the services of several Federal agencies, including the U.S. Weather Service, the U.S. Postal Service, the Federal Emergency Management Agency, and the Federal Aviation Administration. These services are to be provided without reimbursement from the freely associated states and are to be conducted at levels equivalent to those available to the Trust Territory of the Pacific Islands in the year prior to the effective date of the Compacts.

The language of section 221 cross-references Section 232, which provides for separate, subsidiary agreements to address the specific contractual arrangements for the provision of services and programs between the Government of the United States and the freely associated states. While negotiated separately, those agreements came into effect simultaneously with the Compact.

Section 223 of P.L. 99-239 sustains student eligibility for post-secondary educational assistance for those students who were receiving such assistance on the day prior to the effective date of the Compact. Reimbursement by the Department for this assistance will continue only for the duration of these students' academic terms, and is scheduled to end in FY 1991.

Section 233 of P.L. 99-239 requires annual audits on funding appropriated for the Freely Associated States. Pursuant to the Department of the Interior and Related Agencies Appropriations Act for FY 1989, the Department may allocate past and future funding available under Section 232 of the Compact of Free Association Act, P.L. 99-239, for expenses of conducting these audits.

The Compact and the subsidiary agreements structure the program assistance such that the Federal agency providing the service continues to do so for the remaining eligibility period of the FSM and RMI. Once the Compact funds are appropriated in the Department of the Interior and Related Agencies Appropriations Act, the Office of Territorial and International Affairs reimburses the Federal agencies for actual costs incurred.

The total 1991 request for the Federal Services Assistance activity for the FSM and Marshalls Compact is $7,700,000.

2a. Program Grant Assistance (Current Appropriation). This activity provides for recurrent grants as authorized under Section 221(b) of the FSM/Marshalls Compact. An annual grant of $10 million is to be used for governmental activities in the education and health care areas. As specified by subsidiary agreement, the $10 million is to be distributed to the Marshall Islands ($3 million) and FSM ($7 million).

2b. Program Grant Assistance (Permanent Indefinite Appropriation). Section 216 of the Compact calls for a recurrent grant of $5.4 million to be paid to the freely associated states of the FSM and Marshall Islands for post-secondary scholarship programs ($2,687,000) medical referrals and other medical and health-care expenses ($1,791,000), and annual costs of maritime surveillance and enforcement programs ($890,000).

3. Assistance to the Marshall Islands (Permanent Indefinite Appropriation). Section 211 of the Compact of Free Association authorizes payments to the Marshall Islands for the current and capital accounts to be used for government operations and capital development, respectively. Both the current and capital accounts are subject to an annual inflation adjustment with each year's adjustment factor being two-thirds of the annual percentage change in the U.S. Gross National Product Implicit Price Deflator, or 7 percent, whichever is less. This activity also includes Kwajalein Atoll impact funds, which are to be used to finance programs and activities that offset the impact of United States military activities in the Kwajalein Atoll area of the Marshall Islands [Section 213(a)]. Finally, this activity includes a $10 million Investment Development Fund pursuant to Section 111(b)(1) of P.L. 99-239 from which a $6 million payment was made in FY 1988 and a $4 million payment was made in FY 1990. This amount was negotiated to offset changes requested by the United States in the tax and trade provisions of the original Compact.

The Department has included an additional $21 million for FY 1991 to fund the third-year of a total $90 million lump sum commitment (spread out over 5 years) for the Bikini Atoll Resettlement Trust Fund. This commitment was put into law and permanently appropriated in P.L. 100-446, the Appropriation Act for FY 1989 for the U.S. Department of the Interior and Related Agencies. The total estimated budget authority for the Marshall Islands and Bikini Atoll for FY 1991 is $61,236,000.

4. Assistance to the Federated States of Micronesia (Permanent Indefinite Appropriation). This activity is similar to the assistance provided to the Marshall Islands and provides funding for the current and capital accounts, an inflation adjustment, and $20 million in payments for the Investment Development Fund of the Federated States of Micronesia from which $12 million was paid in FY 1988, and $8 million was paid in FY 1990. Total estimated budget authority for this activity in FY 1991 is $87,002,000.

Appropriation Language Sheet

DEPARTMENT OF THE INTERIOR

TERRITORIAL AND INTERNATIONAL AFFAIRS

COMPACT OF FREE ASSOCIATION

For economic assistance and necessary expenses for the Federated States of Micronesia [and], the Republic of the Marshall Islands, and the Republic of Palau as provided for in sections 122, 221, 223, 232, and 233 of the Compacts of Free Association, [$23,260,000] $19,200,000, to remain available until expended, as authorized by Public Law 99-239[;], Public Law 99-658, and Public Law 101-219: Provided, That [notwithstanding the provisions of Public Laws 99-500 and 99-591,] the effective date of the Palau Compact for purposes of economic assistance pursuant to the Palau Compact of Free Association, Public Law 99-658, shall be the effective date of the Palau Compact as determined pursuant to section [101(d) of Public Law 99-658] 101 of Public Law 101-219. Department of the Interior and Related Agencies Appropriations Act, 1990.)

Justification of Proposed Language Changes

Compact of Free Association

1. Addition: "...and the Republic of Palau"

   This language includes Palau under the Compact of Free Association account, since an additional $1.5 million in funding is provided on a contingency basis if Palau ratifies the Compact.

2. Addition: "and, Public Law 101-219:"

   This language authorizes the inclusion of additional appropriations in support of legislation which has been enacted to implement the Palau Compact. The FY 1991 budget total includes $1.5 million for construction related to Palau's prison, anti-drug assistance, and assistance to support a public auditor and a special prosecutor.

3. Deletion: "...notwithstanding the provisions of Public Laws 99-500 and 99-591."

   This action deletes the reference to provision included in the Omnibus Appropriations Act for Fiscal Year 1987 that woud have implemented the Palau Compact. The reference is no longer required since it has been superceded by new legislation (P.L. 101-219).

4. Deletion: "...101(d) of Public Law 99-658"

   This action deletes the reference to the conditions upon which the effective date of the Palau Compact will be determined, since it has been superceded by new legislation.

5. Addition: "...101 of Public Law 101-219."

   This language replaces the deletion contained in item (4) above with the most recent legislation which sets forth the conditions for implementing the Palau Compact of Free Association.

Appropriation Language Citations

Territorial and International Affairs

Appropriation: Compact of Free Association (Current Appropriation)

1. "For economic assistance grants and necessary expenses for the Federated States of Micronesia and the Marshall Islands as provided for in Sections 122, 221, 223, 232 and 233, of the Compact of Free Association, $19,200,000, to remain available until expended, as authorized by Public Law 99-239."

P.L. 99-239, Section 122 provides that "The Government of the United States agrees to accept for training and instruction at the Foreign Service Institute, established under 22 U.S.C. 4021, citizens of the Marshall Islands and the Federated States of Micronesia."

P.L. 99-239, Section 221(a) provides that "That Government of the United States shall make available to the Marshall Islands and the Federated States of Micronesia,..., without compensation and at the levels equivalent to those available to the Trust Territory of the Pacific Islands during the year prior to the effective date of the Compact, the services and related programs:

(1) of the United States Weather Service;
(2) of the United States Federal Emergency Management Agency;
(3) provided pursuant to the Postal Reorganization Act, 38 U.S.C. 101 et seq.;
(4) of the United States Federal Aviation Administration; and
(5) of the United States Civil Aeronautics Board or its successor agencies which has the authority to implement the provisions of paragraph 5 of Article IX of such separate agreement, the language of which is incorporated into this Compact."

P.L. 99-239, Section 221(b) provides that "The Government of the United States, recognizing the special needs of the Marshall Islands and the Federated States of Micronesia particularly in the fields of education and health care, shall make available, as provided by the laws of the United States, the annual amount of $10 million which shall be allocated in accordance with the provisions of the separate agreement referred to in Section 232."

P.L. 99-239, Section 221(c) provides that "The Government of the United States shall make available to the Marshall Islands and the Federated States of Micronesia such alternate energy development projects, studies and conservation measures as are applicable to the Trust Territory of the Pacific Islands on the day preceding the effective date of this Compact, for the purposes and duration provided in the laws of the United States."

P.L. 99-239, Section 221(d) provides that "The Government of the United States shall have and exercise such authority as is necessary for the purposes of this Article and as is set forth in the separate agreements referred to in Section 232, which shall also set forth the extent to which services and programs shall be provided to the Marshall Islands and the Federated States of Micronesia."

P.L. 99-239, Section 223 provides that "The citizens of the Marshall Islands and the Federated States of Micronesia who are receiving post-secondary educational assistance from the Government of the United States on the day preceding the effective date of this Compact shall continue to be eligible, if otherwise qualified, to receive such assistance to complete their academic programs for a maximum of four years after the effective date of this Compact."

P.L. 99-239, Section 232 specifies that "The specific nature, extent and contractual arrangements of the services and programs provided for in Section 221 as well as the legal status of agencies of the Government of the United States, their civilian employees and contractors, and the dependents of such personnel while present in the Marshall Islands or the Federated States of Micronesia, and other arrangements in connection with a service or program furnished by the Government of the United States, are set forth in separate agreements which shall come into effect simultaneously with this Compact."

P.L. 99-239, Section 233 specifies that "The Government of the United States, in consultation with the Governments of the Marshall Islands and the Federated States of Micronesia, shall determine and implement procedures for the periodic audit of all grants and other assistance made under Article I of this Title and of all funds expended for the services and programs provided under Article II of this Title. Such audits shall be conducted on an annual basis during the first five years following the effective date of this Compact and shall be at no cost to the Government of the Marshall Islands or the Federated States of Micronesia."

APPROPRIATION: COMPACT OF FREE ASSOCIATION (CURRENT):

Summary of Requirements

($ in thousands)

	FTE-T	Amount	FTE-T	Amount
Appropriation enacted, 1990			0	23,260
Reduction pursuant to P.L. 99-177			0	—
Adjusted FY 1990 Appropriation			0	23,260
Adjustments to Base:				
Other Increases and/or Decreases:				
Adjustment for Full Funding of Construction Projects and/or Special Programs in Prior Years:				
— Enewetak Support	0	-1,100		
— Other Construction (Kwajalein Atoll)	0	-2,000		
Net, Other Increases and/or Decreases			0	-3,100
Total, Adjustments to Base			0	-3,100
1991 Base Budget			—	20,160
Program changes (changes to base budget, detailed below)				-960
Total Requirements (1991 Estimate)			—	19,200

Appropriation: Compact of Free Association (Current):

Comparison by Activity/Subactivity

	1989 Actual		1990 Enacted to Date		P.L. 99-177 Reduction	1990 Adjusted Appropriation	1991 Base		1991 Estimate		Increase (+) or Decrease (-) from 1990 Appropriation		Increase (+) or Decrease (-) from 1990 Adjusted Appropriation	Increase (+) or Decrease (-) from 1991 Base	
	FTE-T	Amount	FTE-T	Amount	Amount	Amount	FTE-T	Amount	FTE-T	Amount	FTE-T	Amount	Appropriation	FTE-T	Amount
FSM and Marshalls Compact															
Federal Services Assistance:															
Section 122 (Foreign Service Training)	0	280	0	280	0	280	0	280	0	280	0	0	0	0	0
Section 223 (Post-secondary Education)	0	4,880	0	2,460	0	2,460	0	2,460	0	0	0	-2,460	-2,460	0	-2,460
Section 221(a) & 232 (Federal Services)	0	7,600	0	7,420	0	7,420	0	7,420	0	7,420	0	0	0	0	0
Subtotal, Federal Services Asst.	0	12,760	0	10,160	0	10,160	0	10,160	0	7,700	0	-2,460	-2,460	0	-2,460
Program Grant Assistance:															
Section 221(b) (Education/Health Care)	0	10,000	0	10,000	0	10,000	0	10,000	0	10,000	0	0	0	0	0
Subtotal, Program Grant Assistance	0	10,000	0	10,000	0	10,000	0	10,000	0	10,000	0	0	0	0	0
Enjebi Trust Fund	0	2,500	0	0	0	0	0	0	0	0	0	0	0	0	0
Bikini Resettlement	0	5,000	0	0	0	0	0	0	0	0	0	0	0	0	0
Enewetak Support	0	1,100	0	1,100	0	1,100	0	0	0	0	0	-1,100	-1,100	0	0
Other Construction	0	1,000	0	2,000	0	2,000	0	0	0	0	0	-2,000	-2,000	0	0
TOTAL, FSM AND MARSHALLS COMPACT (CURRENT)	0	32,360	0	23,260	0	23,260	0	20,160	0	17,700	0	-5,560	-5,560	0	-2,460
Palau Compact															
Federal Services Assistance															
Section 221(a) & 232 (Federal Services)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Section 223 (Post-secondary education)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal, Federal Services Assistance	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Program Grant Assistance															
Section 221(b) (Health & Education)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	0	0	0	0	0	0	800	0	+800	+800	0	+800
Special Programs	0	0	0	0	0	0	0	0	0	700	0	+700	+700	0	+700
Subtotal, Program Grant Assistant	0	0	0	0	0	0	0	0	0	1,500	0	+1,500	+1,500	0	+1,500
TOTAL, PALAU COMPACT (CURRENT)	0	0	0	0	0	0	0	0	0	1,500	0	+1,500	+1,500	0	+1,500
TOTAL, COMPACTS OF FREE ASSOCIATION (CURRENT)	0	32,360	0	23,260	0	23,260	0	20,160	0	19,200	0	-4,060	-4,060	0	-960

APPROPRIATION: COMPACT OF FREE ASSOCIATION (PERMANENT INDEFINITE):

Comparison by Activity/Subactivity

	1989 Actual*		1990 Enacted to Date		P.L. 99-177 Reduction	1990 Adjusted Appropriation	1991 Base		1991 Estimate		Increase (+) or Decrease (-) from 1990 Appropriation		Increase (+) or Decrease (-) from 1990 Adjusted Appropriation	Increase (+) or Decrease (-) from 1991 Base	
	FTE-T	Amount	FTE-T	Amount	Amount	Amount	FTE-T	Amount	FTE-T	Amount	FTE-T	Amount		FTE-T	Amount
FSM and Marshalls Compact															
Assistance to the Marshall Islands:															
Section 211 (Current Account)	0	15,660	0	15,660	0	15,660	0	15,660	0	15,660	0	0	0	0	0
Section 211 (Capital Account)	0	10,440	0	10,440	0	10,440	0	10,440	0	10,440	0	0	0	0	0
Section 214(a) (Energy Production)	0	2,000	0	2,000	0	2,000	0	2,000	0	2,000	0	0	0	0	0
Section 215(a)(1) (Comm. O&M)	0	300	0	300	0	300	0	300	0	300	0	0	0	0	0
Section 217 (Inflation Account)	0	7,668	0	8,236	0	8,236	0	8,236	0	8,236	0	0	0	0	0
Section 213(a) (Kwajalein Impact)	0	1,900	0	1,900	0	1,900	0	1,900	0	1,900	0	0	0	0	0
Section 111 (Investment Dev. Fund)	0	0	0	4,000	0	4,000	0	4,000	0	0	0	-4,000	-4,000	0	-4,000
Section 216 (See Note 3)	0	1,700	0	1,700	0	1,700	0	1,700	0	1,700	0	0	0	0	0
Subtotal, Marshall Islands Assistance	0	39,668	0	44,236	0	44,236	0	44,236	0	40,236	0	-4,000	-4,000	0	-4,000
Section 103(1) (Bikini Resettlement Trust Fund)	0	0	0	22,000	0	22,000	0	22,000	0	21,000	0	-1,000	-1,000	0	-1,000
Subtotal, Marshalls & Bikini Assistance	0	39,668	0	66,236	0	66,236	0	63,236	0	61,236	0	-5,000	-5,000	0	-5,000
Assistance to the Federated State of Micronesia (FSM):															
Section 211 (Current Account)	0	36,000	0	36,000	0	36,000	0	36,000	0	36,000	0	0	0	0	0
Section 211 (Capital Account)	0	24,000	0	24,000	0	24,000	0	24,000	0	24,000	0	0	0	0	0
Section 212 (Civic Action Teams)	0	1,000	0	1,000	0	1,000	0	1,000	0	1,000	0	0	0	0	0
Section 214(b) (Energy Production)	0	3,000	0	3,000	0	3,000	0	3,000	0	3,000	0	0	0	0	0
Section 215(a)(2) (Comm. O&M)	0	600	0	600	0	600	0	600	0	600	0	0	0	0	0
Section 217 (Inflation Account)	0	17,442	0	18,734	0	18,734	0	18,734	0	18,734	0	0	0	0	0
Section 213(b) (Yap Impact)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Section 111 (Investment Develop. Fund)	0	0	0	8,000	0	8,000	0	8,000	0	0	0	-8,000	-8,000	0	-8,000
Section 216 (See Note 3)	0	1,668	0	1,668	0	1,668	0	1,668	0	1,668	0	0	0	0	0
Subtotal, FSM Assistance	0	85,710	0	95,002	0	95,002	0	95,002	0	87,002	0	-8,000	-8,000	0	-8,000
TOTAL, FSM / MARSHALLS COMPACT (PERMANENT)	0	125,378	0	161,238	0	161,238	0	161,238	0	148,238	0	-13,000	-13,000	0	-13,000
TOTAL, PALAU COMPACT (PERMANENT)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL, COMPACTS OF FREE ASSOCIATION (PERMANENT ACCOUNTS)	0	125,378	0	161,238	0	161,238	0	161,238	0	148,238	0	-13,000	-13,000	0	-13,000
TOTAL, COMPACTS (ALL ACCOUNTS)	0	157,738	0	184,438	0	184,438	0	184,438	0	167,438	0	-17,000	-17,000	0	-17,000

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* Reflects actual obligations for FY 1989 rather than budget authority.

Activity Summary

Appropriation: Compact of Free Association (Current Appropriation)

(dollar amounts in thousands)

Activity		FY 1989 Actual	FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from Base
FSM and Marshalls							
Federal Services Assistance	($)	12,760	10,160	10,160	10,160	7,700	-2,460
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Program Grant Assistance	($)	10,000	10,000	10,000	10,000	10,000	—
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Enjebi Trust Fund	($)	2,500	—	—	—	—	—
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Bikini Resettlement	($)	5,000	—	—	—	—	—
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Enewetak Support	($)	1,100	1,100	1,100	—	—	—
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Other Construction	($)	1,000	2,000	2,000	—	—	—
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Total, FSM and Marshalls (Current)	($)	32,360	23,260	23,260	20,160	17,700	-2,460
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Palau							
Program Grant Assistance	($)	—	—	—	—	1,500	+1,500
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Total, Palau (Current)	($)	—	—	—	—	1,500	+1,500
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
Total, All Compacts (Current)	($)	32,360	23,260	23,260	20,160	19,200	-960
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)

Justification of Program and Performance

Activity: Federal Services Assistance (Current Appropriation)

(dollar amounts in thousands)

Subactivity		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from base
(FSM and Marshalls Compact)						
Section 122	($)	280	280	280	280	—
	(FTE-T)	(—)	(—)	(—)	(—)	(—)
Section 223	($)	2,460	2,460	2,460	—	-2,460
	(FTE-T)	(—)	(—)	(—)	(—)	(—)
Section 221(a), 232 & 233	($)	7,420	7,420	7,420	7,420	—
	(FTE-T)	(—)	(—)	(—)	(—)	(—)
Total Requirements Federal Services Assistance FSM & Marshalls	($)	10,160	10,160	10,700	7,700	-2,460
	(FTE-T)	(—)	(—)	(—)	(—)	(—)

This activity represents continuing services provided by Federal agencies to the Republic of the Marshall Islands and the Federated States of Micronesia. The Department of the Interior will reimburse the Federal agencies for the cost of actual services provided. The level of services was negotiated with the freely associated state governments incident to the termination of the Trusteeship Agreement and are authorized by the terms of the Compact. The provision of these services constitutes an international commitment of the United States. Pursuant to mutual agreement and the provisions of P.L. 99-658 and P.L. 101-219, the services provided by the funding under Section 122 also extend to the Republic of Palau when that Compact for Palau is implemented. In addition, funds provided under Section 232 will also permit audits to be conducted of all compact economic assistance pursuant to Section 110(b) and Section 233 of P.L. 99-239.

Justification of Program and Performance

Activity: Federal Services Assistance
Subactivity: FSM and Marshalls Compact - Section 122

(dollar amounts in thousands)

		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from 1990	Inc. (+) Dec. (-) from base
Section 122	($)	280	280	280	280	—	—
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)

Impact of Public Law 99-177

		1990 Enacted to Date	P.L. 99-177 B.A. Reduction	1990 Adjusted Appropriation
Section 122 (Foreign Service Training Institute)	($)	280	—	280
	(FTE-T)	(—)	(—)	(—)

Because the 1990 appropriation level was below the Gramm-Rudman-Hollings Baseline Target, there was no sequestration and, therefore, no impact of P.L. 99-177.

Authorization. P.L. 99-239, the Compact of Free Association Act of 1985.

Objective.

— To provide for the training of diplomats from the freely associated states.

Base Program. The Federated States of Micronesia, and the Republic of the Marshall Islands are entitled to send representatives of their governments to the Foreign Service Institute of the Department of State for training. The Department of the Interior reimburses the Department of State for the costs it incurs in conducting this training.

Increase/Decrease from FY 1991 Base

(dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
($)	280	280	—
(FTE-T)	(—)	(—)	(—)

There is no change in funding proposed for this subactivity for FY 1991.

Distribution of Change by Object Class

The object class detail for the proposed change is as follows:

	FTE-T	Amount
Other services	(—)	—

Justification of Program and Performance

Activity: Federal Services Assistance
Subactivity: FSM and Marshalls Compact - Section 223

(dollar amounts in thousands)

		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from 1990	Inc. (+) Dec. (-) from base
Section 223	($)	2,460	2,460	2,460	—	-2,460	-2,460
	(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)

Impact of Public Law 99-177

		1990 Enacted to Date	P.L. 99-177 B.A. Reduction	1990 Adjusted Appropriation
Section 223 (Post-secondary Education Assistance)	($)	2,460	—	2,460
	(FTE-T)	(—)	(—)	(—)

Because the 1990 appropriation level was below the Gramm-Rudman-Hollings Baseline Target, there was no sequestration and, therefore, no impact of P.L. 99-177.

Authorization. P.L. 99-239, the Compact of Free Association Act of 1985.

Objective.

— To continue financial assistance for students from the Marshall Islands and the Federated States of Micronesia who are attending post-secondary education institutions in the United States and who were receiving such financial assistance on the effective date of the Compact. (Section 223 generally refers to assistance under the Pell Grant program from the Department of Education.)

Decrease from FY 1991 Base

(dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
($)	2,460	—	-2,460
(FTE-T)	(—)	(—)	(—)

Since no new students were to be accepted under this program, which lasts for a maximum of four academic years since implementation of the Compact, the number of students receiving assistance has declined each year until the program terminates in FY 1990. However, Congress has extended assistance under this program without future reimbursement from the Department of the Interior. Therefore, no additional funds are required for this subactivity for FY 1991.

Distribution of Change by Object Class

The object class detail for the proposed change is as follows:

	FTE-T	Amount
Other services	(—)	-$2,460,000

Justification of Program and Performance

Activity: Federal Services Assistance
Subactivity: FSM and Marshalls Compact - Section 221(a), 232, & 233

(dollar amounts in thousands)

	FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from 1990	Inc. (+) Dec. (-) from base
Section 221(a), 232 & 233 ($)	7,420	7,420	7,420	7,420	—	—
(FTE-T)	(—)	(—)	(—)	(—)	(—)	(—)
(Federal Agency Reimbursements/Audits)						

Impact of Public Law 99-177

	1990 Enacted to Date	P.L. 99-177 B.A. Reduction	1990 Adjusted Appropriation
Section 221(a), 232, and 233 ($)	7,420	—	7,420
(Federal Agency Reimbursements/Audits) (FTE-T)	(—)	(—)	(—)

Because the 1990 appropriation level was below the Gramm-Rudman-Hollings Baseline Target, there was no sequestration and, therefore, no impact of P.L. 99-177.

Authorization. P.L. 99-239, the Compact of Free Association Act of 1985.

Objective.

- To continue Federal Services pursuant to Section 221(a) of the Compact and in accordance with the terms of the Federal Programs and Services Agreement (the agreement subsidiary to Compact Section 232), and Section 233.

Base Program. Continuing services are to be provided to the freely associated states by the Federal Aviation Administration (FAA), the United States Weather Service and the United States Postal Service. The programs will continue throughout the fifteen-year period of financial assistance. To date, these Federal agencies have been reimbursed by the Department of the Interior for the costs incurred in conducting these programs. In addition, funding provided under this subactivity is used to pay for the costs of the annual single audits of compact funds required by Section 233 of P.L. 99-239.

Increase/Decrease from FY 1991 Base

(dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
($)	7,420	7,420	—
(FTE-T)	(—)	(—)	(—)

There is no change in funding proposed for this subactivity for FY 1991.

Distribution of Change by Object Class

The object class detail for the proposed change is as follows:

	FTE-T	Amount
Other services	(—)	—

Justification of Program and Performance

Activity: Program Grant Assistance (Current Appropriation)

(dollar amounts in thousands)

Subactivity		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from base
(FSM and Marshalls Compact)						
Section 221(b)	($)	10,000	10,000	10,000	10,000	—
	(FTE-T)	(—)	(—)	(—)	(—)	(—)
Total Requirements,	($)	10,000	10,000	10,000	10,000	—
Prog. Grant Asst. (FSM & Marshalls)	(FTE-T)	(—)	(—)	(—)	(—)	(—)
(Palau Compact)						
Construction	($)	—	—	—	800	+800
	(FTE-T)	(—)	(—)	(—)	(—)	(—)
Special Programs	($)	—	—	—	700	+700
	(FTE-T)	(—)	(—)	(—)	(—)	(—)
Total Requirements,	($)	—	—	—	1,500	+1,500
Prog. Grant Asst. (Palau)	(FTE-T)	(—)	(—)	(—)	(—)	(—)
Total Requirements,	($)	10,000	10,000	10,000	11,500	+1,500
Prog. Grant Asst. (Current Approp.)	(FTE-T)	(—)	(—)	(—)	(—)	(—)

This activity represents continuing program grants to the Freely Associated States for special needs in the fields of education and health care in accordance with the provisions of the separate agreement referred to in Section 232 of both Compacts. It also includes contingency funding for construction and special programs authorized for Palau in Public Law 101-219. These funds for Palau will only be obligated and expended upon implementation of the Palau Compact pursuant to the provisions of Section 101 of P.L. 101-219.

Justification of Program and Performance

Activity: Program Grant Assistance (Current Appropriation)
Subactivity: FSM and Marshalls Compact - Section 221(b)

(dollar amounts in thousands)

Subactivity		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from base
Section 221(b)	($)	10,000	10,000	10,000	10,000	—
	(FTE-T)	(—)	(—)	(—)	(—)	(—)

Impact of Public Law 99-177

		1990 Enacted to Date	P.L. 99-177 B.A. Reduction	1990 Adjusted Appropriation
Section 221(b) (Health/Educ.	($)	10,000	—	10,000
Block Grant)	(FTE-T)	(—)	(—)	(—)

Because the FY 1990 appropriation level is below the Gramm-Rudman-Hollings Baseline Target, there is no sequestration and, therefore, no impact of P.L. 99-177.

Authorization. P.L. 99-239, the Compact of Free Association Act of 1985.

Objective.

— To provide for the special needs of the Marshall Islands and the Federated States of Micronesia in the fields of education and health care.

Base Program. The Compact Section 221(b) recurrent grant of $10 million is to be paid to the Governments of the Marshall Islands and the Federated States of Micronesia in the amounts of $3 million and $7 million, respectively. The freely associated state governments are required to use the funding to finance the provisions of Article XI of the Compact of Free Association subsidiary agreement on Federal Programs and Services. The Compact calls for the United States to make the amount of $10 million available for these purposes each year for fifteen years. This grant is not subject to the full faith and credit pledge of Compact Section 236.

Increase/Decrease from FY 1991 Base

(dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
($)	10,000	10,000	---
(FTE-T)	(--)	(--)	(--)

There is no change in the funding level for this subactivity for FY 1991.

Distribution of Change by Object Class

The object class detail for the proposed change is as follows:

	FTE-T	Amount
Other services	(--)	---

Justification of Program and Performance

Activity: Program Grant Assistance (Current Appropriation)
Subactivity: Palau Compact - Construction

(dollar amounts in thousands)

Subactivity		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from base
Palau Prison	($)	—	—	—	800	+800
	(FTE-T)	(—)	(—)	(—)	(—)	(—)
Total Requirements	($)	—	—	—	800	+800
	(FTE-T)	(—)	(—)	(—)	(—)	(—)

Impact of Public Law 99-177

		1990 Enacted to Date	P.L. 99-177 B.A. Reduction	1990 Adjusted Appropriation
Palau Compact - Construction	($)	—	—	—
(Prison)	(FTE-T)	(—)	(—)	(—)

Since this is a new line-item being proposed for the first time for FY 1991, there was no FY 1990 impact of P.L. 99-177.

Authorization Public Law 101-219.

Objectives To provide funds for expansion and improvements for the central prison facility. The existing jail is in poor and dangerous physical condition. It is severely overcrowded and there are no separate facilities for female or juvenile prisoners.

Base Program Not applicable.

Explanation of Increase: This proposed funding is in support of P.L. 101-219, legislation to implement the Palau Compact. The existing facility has gone beyond its useful life, and is in a state of disrepair. The physical condition of the prison is dangerous, unsanitary, and lacks facilities needed for the current prison population. A facility designed for 21 prisoners now holds an average of 65. The layout of the existing prison does not provide separate facilities for dangerous inmates, nor facilities for female, juvenile, or minor offense prisoners. These conditions are in violation of the Palau Constitution.

The proposed 1991 construction funds for the Palau Prison Improvements/Expansion project should be contingent on the development of a comprehensive criminal justice plan, and will only be obligated and expended upon implementation of the Palau Compact pursuant to the provisions of Section 101 of P.L. 101-219.

Increase from FY 1991 Base

(Dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
($)	—	800	+800
(FTE-T)	(—)	(—)	(—)

The increase of $800,000 will provide funds for improvements and expansion of the central prison facility in Palau.

Distribution of Change by Object Class

The object class detail for the proposed $800,000 increase is as follow:

	Amount
Grants, subsidies, and contributions	+$800,000

Justification for Construction

Activity: Program Grant Assistance (Current Appropriation)
Subactivity: Palau Compact - Construction

Project	Total Estimated Cost	Total BA through FY 1990	FY 1991 Request
Palau Prison	$900,000	$100,000	$800,000

Statement of Need

This request is to provide funds to renovate the existing prison, and to construct an addition to house existing prisoners. The original facility, constructed to house 21 prisoners, is severely overcrowded, with an average population of 65 prisoners. Current facilities are in a state of disrepair and the physical condition of the prison is dangerous, unsecured and unsanitary. Republic of Palau regulations and statues require segregation of prisoners according to type of conviction, age and sex. While modifications were made with $100,000 of earlier funding, facilities remain inadequate for prison population requirements.

Description

The funds will be used for prison expansion and improvements in accordance with a Comprehensive Criminal Justice Plan. This plan shall include a construction budget for improvements to the central prison facility. No funds shall be released until Palau submits the plan to the Federal Government for approval. In addition, these funds will only be made available to Palau upon implementation of the Palau Compact pursuant to the provisions of P.L. 101-219.

Benefits

The renovation of the existing prison, and the construction of new prison facilities will demonstrate good faith on the part of the U. S. Government as the Republic of Palau becomes a freely associated state under the Compact of Free Association. Modification and construction of the prison facilities will assist the Government in the improvements and modernization of the Justice system for the Republic.

Cost of Completion

A. Cost Categories:

1. U.S. Government Commitment	$900,000
2. Previous Department of the Interior Funding Under Trust Territory Construction	-100,000
Total Project Funds (FY 1991)	$800,000

B. Source of Funds:

The Department of the Interior has already provided funds for the repair of the most immediate problems at the prison. However, inmate populations average 65, exceeding the design limits of the existing prison of 21 inmates. The Department of the Interior will provide funding for construction improvements and an addition at the existing facility, and for the purchase of equipment and materials required to upgrade the existing facility and for the new addition. Any additional funds desired by Palau to expand the current plan will have to come from other sources, such as local revenues or funding available under the Compact of Free Association. The Republic of Palau will be responsible for all costs related to operation and maintenance after completion of construction.

Justification of Program and Performance

Activity: Program Grant Assistance (Current Appropriation)
Subactivity: Palau Compact - Special Programs

(dollar amounts in thousands)

Subactivity		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from base
Drug Enforcement	($)	—	—	—	400	+400
	(FTE-T)	(—)	(—)	(—)	(—)	(—)

Impact of Public Law 99-177

		1990 Enacted to Date	P.L. 99-177 B.A. Reduction	1990 Adjusted Appropriation
Palau Compact - Special	($)	—	—	—
Programs (Drug Enforcement)	(FTE-T)	(—)	(—)	(—)

Since this is a new line-item being proposed for the first time for FY 1991, there was no FY 1990 impact of P.L. 99-177.

Authorization Public Law 101-219.

Objectives

— To provide for the special needs of the Republic of Palau in the field of Anti-drug and drug enforcement programs.

Base Program Not applicable.

Increase from FY 1991 Base

(Dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
($)	—	400	+400
(FTE-T)	(—)	(—)	(—)

This proposed funding is authorized in Public Law 101-219, legislation to implement the Palau Compact. These funds will be used to implement a drug enforcement program for the Republic of Palau when the Palau Compact is implemented, pursuant to the conditions of Section 101 of P.L. 101-219.

Funds will be used for the purchase of radios and other equipment required to establish good operational radio networks on island and with marine enforcement authorities. Funds will also be used to promote operations to reduce and eradicate cannabis growing in Palau and to continue youth and adult drug education programs. This project is part of the Department of the Interior program to eliminate drug production and transit through the Pacific region.

Distribution of Change by Object Class

	Amount
Grants, subsidies and contributions	+$400,000

Justification of Program and Performance

Activity: Program Grant Assistance (Current Appropriation)
Subactivity: Palau Compact - Special Programs

(dollar amounts in thousands)

Subactivity		FY 1990 Enacted to Date	FY 1990 Adjusted Appropriation	FY 1991 Base	FY 1991 Estimate	Inc. (+) Dec. (-) from base
Special Prosecutor/	($)	—	—	—	300	+300
Public Auditor	(FTE-T)	(—)	(—)	(—)	(—)	(—)

Impact of Public Law 99-177

		1990 Enacted to Date	P.L. 99-177 B.A. Reduction	1990 Adjusted Appropriation
Palau Compact - Special Programs	($)	—	—	—
(Special Prosecutor/Public Auditor)	(FTE-T)	(—)	(—)	(—)

Since this is a new line-item being proposed for the first time for FY 1991, there was no FY 1990 impact of P.L. 99-177.

Authorization Public Law 101-219.

Objectives

— To provide funds for a Special Prosector and Public Auditor for the Republic of Palau.

Base Program Not Applicable.

Increase from FY 1991 Base

(Dollar amounts in thousands)

	FY 1991 Base	FY 1991 Estimate	Difference
($)	—	300	+300
(FTE-T)	(—)	(—)	(—)

This proposed funding is authorized in Public Law 101-219, legislation to implement the Palau Compact. $150,000 of these funds will be used for the operation of the Office of the Special Prosecutor, responsible for assisting the Government of the Republic of Palau, Minister of Justice and Office of the Attorney General in development and prosecution of unique and special legal cases involving major crimes against the Government of Palau.

The remaining $150,000 will be used for the operation of the Office of the Public Auditor, responsible for conducting audits of the Republic of Palau, Federal and other funds used by the Government of Palau. The Auditor will assist the Government of Palau in establishing standard annual audit procedures to assure audits of public funds are continued on a regular basis.

These funds will only be obligated when the Palau Compact has been implemented pursuant to Section 101 of P.L. 101-219.

Distribution of Change by Object Class

	Amount
Grants, subsidies and contributions	+$300,000

DEPARTMENT OF THE INTERIOR
OFFICE OF TERRITORIAL AND INTERNATIONAL AFFAIRS
COMPACT OF FREE ASSOCIATION

Program and Financing (in thousands of dollars)
(FSM, Marshalls, and Palau Compacts) / (Current and Permanent Accounts)

14-0415-0-1-808	1989 actual	1990 estimate	1991 estimate
Program by activities:			
Direct Program:			
1. Federal Services Assistance	32,973	20,160	7,700
2. Program Grant Assistance	10,000	10,000	10,000
3. Assistance to the Marshall Islands	39,668	44,236	40,236
4. Assistance to the Federated States of Micronesia	86,961	95,002	87,002
5. Assistance to the Republic of Palau	—	—	—
6. Enjebi Trust Fund	2,500	—	—
7. Bikini Resettlement	5,000	22,000	21,000
8. Enewetak Support	1,100	1,100	—
9. Other Construction	1,000	2,000	—
Total, direct program	179,202	194,498	165,938
10.00 Total Obligations (Object Class 41)	179,202	194,498	165,938
Financing:			
21.40 Unobligated balance available, start of year	-92,124	-26,102	-16,102
24.40 Unobligated balance available, end of year	26,102	16,102	17,602
39.00 Budget Authority (Appropriation)	113,180	184,498	167,438
Budget Authority:			
40.00 Appropriation (Current)	32,360	23,260	19,200
60.00 Appropriation (Permanent indefinite)	80,820	161,238	148,238
Relation of obligations to outlays:			
71.00 Obligations incurred, net	179,202	194,498	165,938
72.40 Obligated balance, start of year	14,359	40,798	33,857
74.40 Obligated balance, end of year	-40,798	-33,857	-33,857
90.00 Outlays	152,763	201,439	165,938

DEPARTMENT OF THE INTERIOR
OFFICE OF TERRITORIAL AND INTERNATIONAL AFFAIRS
COMPACT OF FREE ASSOCIATION

Object Classification (in thousands of dollars)

14-0415-0-1-808	1989 actual	1990 estimate	1991 estimate
Direct Program			
25.00 Other services	32,973	20,160	7,700
41.00 Grants, subsidies, and contributions	146,229	174,338	158,238
99.00 Total obligations	179,202	194,498	165,938

DEPARTMENT OF THE INTERIOR
OFFICE OF TERRITORIAL AND INTERNATIONAL AFFAIRS
PAYMENTS TO THE UNITED STATES TERRITORIES, FISCAL ASSISTANCE

Program and Financing (in thousands of dollars)

14-0418-0-1-806	1989 actual	1990 estimate	1991 estimate
Program by activities:			
1. Advance payments to Guam of estimated U.S. income tax collections	50,198	44,000	46,000
2. Advance payments to the Virgin Islands of estimated U.S. excise tax collections	29,592	26,000	29,000
10.00 Total obligations (object class 41.0)	79,790	70,000	75,000
21.40 Unobligated balance, start of year	—	—	—
24.40 Unobligated balance, end of year	—	—	—
Financing:			
60.00 Budget Authority (appropriation) (Permanent, indefinite, general fund)	79,790	70,000	75,000
71.00 Obligations incurred, net	79,790	70,000	75,000
72.40 Obligated balance, start of year	—	—	—
74.40 Obligated balance, end of year	—	—	—
90.00 Outlays	79,790	70,000	75,000

DEPARTMENT OF THE INTERIOR
OFFICE OF TERRITORIAL AND INTERNATIONAL AFFAIRS
CONSOLIDATED SCHEDULE OF PERMANENT POSITIONS

DETAIL OF PERMANENT POSITIONS

	1989 actual	1990 estimate	1991 estimate
Executive Level V....................	—	—	—
Subtotal...........................			
ES-4................................	—	—	—
Subtotal...........................	—	—	—
GS/GM-18............................	1	1	1
GS/GM-16............................	2	2	2
GS/GM-15............................	10	10	10
GS/GM-14............................	5	5	5
GS/GM-13............................	5	5	5
GS-12...............................	6	6	9
GS-11...............................	3	3	4
GS-10...............................	-	-	-
GS-9................................	2	2	2
GS-8................................	2	1	1
GS-7................................	2	2	2
GS-6................................	1	2	2
GS-5................................	2	2	3
GS-4................................	2	2	2
GS-3................................	1	1	1
Subtotal...........................	44	44	49
Ungraded............................	—	—	—
Total, permanent positions, end of year...............................	44	44	49

DEPARTMENT OF THE INTERIOR
Territorial and International Affairs

Rental Payments for Space and Land

Account Title/Code: Administration of Territories (14-0412)

A. GSA-Controlled Space	1989	1990	1991
1. Average Rate per Sq. Ft. (Rent/Sq.Ft.):			
Office Space	$18.00	18.00	18.00
Non-Office Space	3.50	3.50	3.50
Rate per Controlled sq. ft.	10.75	10.75	11.50
2. Work Space Estimates (sq. ft. in thousands):			
Office Space	2.0	2.0	2.0
Non-Office Space	2.0	2.0	2.0
Total	4.0	4.0	4.0
3. Annual GSA Rental Amounts ($ in thousands):			
Office Space	$ 36	36	36
Non-Office Space	7	7	7
Total	$ 43	43	43
4. Adjustments:			
Congressional Limitations(-)	0	0	0
Joint-Use Space(+)	0	0	0
5. Total Rental Payments to GSA (O/C 23.1)	43	43	43
6. Funding Sources:			
Direct Appropriations	43	43	49
Other: Reimbursements	0	0	0
Total	43	43	49
7. Other Payments (O/C 25.0):			
Sub-leases/GSA Controlled Space	218	268	284
B. Agency-Rented Space and Land			
1. Rental Payments by Type (O/C 23.2):			
Office Space	0	0	0
Non-Office Space (excluding parking)	0	0	0
Parking	1	1	1
Other Land	0	0	0
Other Rentals	0	0	0
Total Rental Payments to Others	1	1	1
2. Other Payments (O/C 25.0):			
Extra Services	0	0	0
Sub-lesses of Non-GSA Controlled Space	0	0	0

Exhibit
OMB Bulletin 89-20
Circular A-120

ADVISORY AND ASSISTANCE SERVICES

UNITED STATES DEPARTMENT OF THE INTERIOR
TERRITORIAL AND INTERNATIONAL AFFAIRS
Administration of Territories

(In Thousands of Dollars)

Account Title and Symbol		1989	1990	1991
Administration of Territories: No. 14-0412-0-1-808				
I. Contractual Services				
Individual Experts & Consultants	B.A.	-0-	-0-	-0-
	Oblig.	-0-	-0-	-0-
	Outlays	-0-	-0-	-0-
Studies, Analyses & Evaluations	B.A.	-0-	-0-	-0-
	Oblig.	-0-	-0-	-0-
	Outlays	-0-	-0-	-0-
Management & Professional Support Svcs.	B.A.	-0-	-0-	-0-
	Oblig.	-0-	-0-	-0-
	Outlays	-0-	-0-	-0-
Engineering & Technical Services	B.A.	-0-	-0-	-0-
	Oblig.	-0-	-0-	-0-
	Outlays	-0-	-0-	-0-
Subtotal	B.A.	-0-	-0-	-0-
	Oblig.	-0-	-0-	-0-
	Outlays	-0-	-0-	-0-
II. Personnel Appointments	B.A.	-0-	35	-0-
	Oblig.	-0-	35	-0-
	Outlays	-0-	35	-0-
III. Advisory Committees	B.A.	-0-	-0-	-0-
	Oblig.	-0-	-0-	-0-
	Outlays	-0-	-0-	-0-
TOTAL	B.A.	-0-	35	-0-
	Oblig.	-0-	35	-0-
	Outlays	-0-	35	-0-

ADVISORY AND ASSISTANCE SERVICES

DEPARTMENT OF THE INTERIOR
TERRITORIAL AND INTERNATIONAL AFFAIRS

EXPLANATORY STATEMENT

To the best of our knowledge, no advisory and assistance services, as defined by OMB Circular A-120, were procured by the Office of Territorial and International Affairs (OTIA) in fiscal year 1989.

In fiscal year 1990, OTIA is recruiting a consultant appointment, to provide technical advice to the Assistant Secretary, TIA, regarding economic recovery efforts in the U.S. Virgin Islands following devastation caused by Hurricane Hugo. The consulting services are necessary due to the lack of technical expertise in OTIA in the subject matter.

No advisory and assistance services are anticipated in fiscal year 1991.

OTIA, as part of its mission and programs, provides technical assistance to U.S.-affiliated insular areas. Funding for this program is estimated at approximately $5.5 million per year. Under this program, OTIA can provide that assistance through grants, cooperative agreements, contractual services, demonstration projects etc. OTIA does not consider this program as falling within the definitions of OMB Circular.